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Original Articles.

THROMBOANGIITIS OBLITERANS.

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As a result of history and findings in two cases of thromboangiitis obliterans seen on the wards of the Massachusetts General Hospital, this review has been written for the purpose of bringing to the attention of the medical profession several interesting features, both as to findings and treatment.

The first patient, a young Hebrew of 32 years, developed this disease directly under the eyes of the attending surgeons. He was born in Kiev, Russia, and had had infantile paralysis of the left leg, dating from childhood. He was first admitted to the hospital in April, 1921, for a tendon operation for pes equinus. The wound did not heal readily and the toes became red and painful, resulting in a definite diagnosis of endarteritis being made.

In spite of various forms of treatment the condition grew gradually worse, and in February, 1922, he was again admitted to the wards for treatment of the wound, but there was no success.

In April, 1922, after intensive measures had failed, he was admitted again for operation. Various consultants had offered equally varied opinions as to just what should be done. However, the consensus of opinion was for amputation either of the foot or at a point of election in the lower leg, and this later site was chosen. The day before operation the condition of the arteries was reported as follows: Dorsal pedis —right, present; left, absent. Posterior tibial—right, present; left, absent. Popliteal—right, present; left, faint. A careful flap amputation was performed, but two days later the flaps had melted away. Traction was placed on the skin edges but no progress in healing was obtained. It then became necessary to consider re-amputation, and it was decided, after much hesitancy, to explore the popliteal vessels and, if any obliteration was found, to operate above the knee.

At the time of operation the popliteal vessels were found to be fibrous cords and the leg was amputated at the junction of the middle and lower third. After the average length of time the wound healed and further treatment was instituted with a permanent artificial leg in view.

The other case was that of a Hebrew of 45, born in northern Russia and admitted to the hospital for treatment of an ulceration on his foot. He had been under treatment for eight months by a Boston orthopedic surgeon who had been conservative in his methods. After attempting to heal the ulceration, which was on the great toe, by palliative measures, the toe was amputated but the flaps disappeared and

a large ulceration remained without any sign of healing.

In the hospital there was a great desire to amputate the foot, but, considering the wishes of the surgeon who referred the case to the hospital, re-amputation of the first metatarsal bone was done and new flaps made. These flaps did not survive as long as did the first pair, and after two months of treatment, in which the patient failed perceptibly from a general standpoint, a high amputation was advised. As in the preceding case, at operation the popliteal vessels were explored, found closed, and the leg was removed above the knee. The wound healed readily.

It was interesting to note that both cases had been constant cigarette smokers.

As much confusion has occurred in the literature on the subject of thromboangiitis obliterans, as well as in the minds of many physicians, because of the multiplicity of titles and ideas in the literature, the object of this paper is an endeavor to explain these theories and to emphasize the pertinent theoretical and clinical material as it occurs.

Such cases are most prevalent in the large cities of the East, more especially in New York and Boston. In the latter city they are almost of daily occurrence in the hospital clinics and among the specialists, whether it be internist, surgeon, neurologist, or orthopedist.

An attempt has been made by the author to see as many of these cases as have been brought to his attention at the Massachusetts General Hospital, for the purpose of confirming or refuting the claims of others in regard to etiology and treatment, especially.

Nomenclature.—Buerger's disease, Jiddaische Krankheit, intermittent limping or claudication, endarteritis obliterans, and thromboangiitis obliterans are among the most common terms applied to this disease. The latter title appears to be the most appropriate, in view of the modern theories, although it is rather cumbersome; but is no more so than many other accepted terms in use today for various maladies.

Etiology.—In the *Medical Record* for March, 1920, Willie Meyer claims tobacco smoke to be the exciting cause of this disease, stating emphatically that those cases in which tobacco cannot play a rôle are not thromboangiitis obliterans. He offers three stages of tobacco smoke poisoning: First, one of acute poisoning, as exhibited by the neophyte of the habit; second, a long stage of tolerance, with frequent symptoms attributed to overindulgence. Third, a final stage of saturation, in which this class of case falls. A vicious circle has been established when these sufferers first visit the physician. They have passed the initial stimulating effect of the poison and have been under the depressing effect for some time. Hypofunction of the poisoned sympathetic nervous system has set in, weakening thereby the function of the sympathetically innervated glands (kidneys, intestinal and salivary), which eliminate the poisons, with the consequent accumulation of those poisons in the system, and thereby again causing the aggravation of the hypofunction of the sympathetic nerves.

For such a cycle a predisposition of the sympathetic nervous system is necessary, and this is clearly found in that group of Hebrews who immigrate to this country from a territory lying between the Baltic and Black Seas, Poland and Russia. Generations of oppression have left their effects on the nervous systems of these people. They are born neurasthenics, exhibiting many of the nervous phenomena which we see today.

The male members of this race begin smoking early in life and become inveterate cigarette smokers. In the past the author has worked in the produce markets, in which place these men are seen in great numbers. Such an opportunity must be had to appreciate the manner in which these men consume tobacco. A cigarette is constantly hanging from one corner of their lips and all smoke is inhaled deeply into the lungs. A cheap grade of Turkish tobacco is generally used.

Women have been reported to have had this disease but, with a few personal observations in mind, it would appear more likely—at least, more diplomatic—to consider these cases as Raynaud's disease, which, by the way, is another type of circulatory disturbance due to an unstable sympathetic nervous system and one closely allied to that of thromboangiitis obliterans. We must remember that, although Raynaud's disease was originally reported as "symmetrical gangrene," it is found quite asymmetrical much more frequently.

Pathology.—In the same *Medical Record* as given above, Leo Buerger dealt with the pathology of thromboangiitis obliterans, and he emphasized the following features:

First, that this condition is a disease in which acute inflammatory reactions and occlusive thrombosis are the characteristic lesions.

Second, that from the mechanical and symptomatic standpoint, the thrombotic occlusion is the most important phenomenon.

Third, that the thrombosis is probably preceded, and certainly accompanied by an acute inflammatory or exudative stage.

Fourth, that the lesion involves deep veins in about 40 per cent. and superficial veins of the upper and lower extremity in 20 per cent. of the cases.

Fifth, that acute investigations of the veins show that the acute lesions in the superficial vessels and the deep vessels are identical.

Sixth, that the histologic changes in the veins point to the existence of an infectious process.

Seventh, that future studies should be directed toward the discovery of the causative agent

in specimens cut from the superficial vessels when they are the seat of the acute thrombophlebitis.

There is, undoubtedly, an inflammatory process existing in these vessels at an early period, but of a low-grade nature. Clinically, the signs of inflammation are more frequently lacking. However, there must be some existing cause leading to the thrombosis which is, perhaps, a necrosis of the intima of the vsesels, not due to an infectious nature—which has never been determined—but to some systemic irritant, tobacco smoke being the most likely. Phlebitis, in the cases seen here, is a late symptom, very mild, and of little significance. One case in particular, followed nearly from the appearance of the initial discomfort, gradually developed a typical thromboangiitis obliterans without any local or systemic signs other than the obliteration of the arteries with the resulting "arterial hunger," as mentioned by Geist.

As has been stated above, no definite infectious agent has yet been discovered. This failure has been accounted for by investigators by the fact that, when these cases appear in some medical circle the infectious stage has passed. It would seem more logical to suppose, in the light of our present knowledge of the cause, that the inflammatory or exudative stage is brought about through local irritation by one or more of the chemical constituents of tobacco smoke. This is made extremely plausible by the general admission of large numbers of cigarettes consumed and the evident method of inhaling this smoke.

Because of the nature of the individual with whom we are dealing and because the early stage of this disease is not often seen, it is impossible to determine the primary reactions of these tissues from a pathological standpoint; but, by the aid of the history, we may divide this disease into four states: (1) vasospasm, due to irritation of the vasoconstrictors, paralysis of the vasodilators, or local irritation of the vessel walls; (2) low-grade inflammation of the vessel walls; (3) slowly progressive thrombosis; and (4) fibrosis of the thrombi and the vessels themselves. Occasionally a fifth stage has been observed, namely, canalization of the fibrous cords.

Symptoms and Physical Findings.—The average case has been found to progress slowly and steadily to the time of admission to the hospital, and may progress thereafter in spite of treatment. With few exceptions the following order is maintained, according to careful inquiry and close observation of the patient after admission:

First, mild sensations of arterial hunger, such as burning, tingling, and transient sharp pain appear in the feet, accompanied by blushing of the feet, frequently mistaken for congestion. At this period slight inequalities of the pulses in the dorsalis pedis arteries may be found.

Second, intermittent cramps occur in the calf muscles upon any over-exertion. This is not pathognomonic of thromboangiitis obliterans but is due to blood hunger. The pulsations are much diminished and, usually, in this period the posterior tibial artery becomes involved.

Third, constant pain, burning or knife-like in character and worse at night, makes its appearance in the metatarsal and phalangeal regions of the feet. Pulsations are rarely discernible. If the leg is held dependent it becomes livid; if elevated, it turns waxen in appearance.

Fourth, at this time the slightest trauma will cause an abrasion which usually will not heal, and which quickly becomes converted into an ulcerated area. Ths region immediately surrounding the ulcer is red and glistening, exquisitely tender and indurated to the touch.

The fifth and final stage is that of gangrene, generally found in the third, fourth, fifth, second, and first digits in this order of frequency. One or more may be involved.

Differential Diagnosis.—We must not only consider other circulatory disturbances, but also foot strains of all kinds.

In Raynaud's disease there is an alternating flushing and blanching of the foot; but as there is no organic change present, heat or cold as is indicated, will alter the size of the vessels and relieve the condition temporarily. Such is not the case in thromboangiitis obliterans for thermal changes will have little, if any, effect upon the condition as present. Ulcers, developing in the course of Raynaud's disease, are readily healed by the proper treatment. Many old cases of this kind will show many scars of former ulcerations.

Erythromelalgia is best differentiated by the sharp line of demarcation between the dorsal and plantar surface. The latter surface is red and glistening, while the rest of the foot is pale and atrophic. Such a case will frequently be pitted with small keratoses within the flushed area.

Angina cruris, as described by Walton, is purely symptomatic, a case of arterial hunger of the thigh and calf muscles due to arteriosclerosis of the vessels of that region. There are rarely any symptoms attributed to the feet.

Routine examination of the feet in all Hebrew subjects is the surest manner of excluding thromboangiitis obliterans from a possible foot strain. In localities where such cases are prevalent, this diagnosis must be borne in mind constantly. Contrary to the usual findings in foot strains, thromboangiitis obliterans seldom exhibits any evidence of tenderness in the foot, particularly in the early stages.

Of course, if our pathology is correct that is reason enough for watching carefully for diseases of this kind among Gentiles, as well as Jews. There are innumerable instances of instability of the nervous system in the French, Anglo-Saxons, and the Latin races. Reports of

this nature are given in the literature occasionally, the majority of which are correct. No such cases have, as yet, been seen by the author.

Prognosis and Treatment.—No attempt has ever been made to collect these sufferers into any one clinic at the Massachusetts General Hospital. They have drifted into that department which has offered the most relief for their chief complaint. Therefore, in the orthopedic department we have received only those people who have had foot pain. The larger number have received treatment for foot strain, but without relief, and they have naturally drifted elsewhere. Some of them will display a series of foot plates obtained at various places. Even when a diagnosis has been made, if pain or ulceration has not improved perceptibly, they are very prone to "pull up stakes" and go elsewhere. For this reason statistics of any kind are of no immediate value.

It is an absolute impossibility to convince these sufferers that they cannot be made well in a short time. It is equally impossible to force them to surrender to bed treatment. They cannot and will not do so. It must be borne in mind that wealthy Hebrews, who are able and willing to undergo any long treatment, are scarce in this region of the country.

It is an established fact that a certain percentage of these cases will recover with little, if any, treatment. It is doubtful whether subjects complicated by ulcerations ever improve spontaneously. We do know that collateral circulations will form in the course of months, and that canalization of the thrombi can take place. An interesting example of this fact recently came to view in a middle-aged Hebrew. Several years ago one leg was removed because of an ulcerated area on the foot. For one or two years he remained free from all symptoms and then developed the pain and other discomforts in the opposite leg and foot. This time he was advised against operation and devoted himself to palliative treatment entirely (hydrotherapy, rest, and potassium iodide). Within two years he was back at his work and has been free from symptoms for several years.

It does not seem very unreasonable to suppose that, if all cases could be diagnosed early, put to bed for months, given potassium iodide or nitroglycerine, massage and local hydrotherapy, they would be much improved and the greater percentage would be cured; but such a course is extremely Utopian. Our general hospitals are unable to supply beds for such long periods even if our patients would permit it. Almost 100 per cent. of these people would need financial aid for their families, for they come from the hard-working and frugal-living class. Therefore, in a city where such cases are relatively many just what can be done to keep them active or, at least, not wholly dependent upon charitable relief?

Our first duty is early diagnosis, keeping continually in mind the possibility of thromboangiitis obliterans. Our next responsibility demands that we take particular interest in this type of case, attempting to gain the patient's confidence and, above all, to convince him of the gravity of his disease. Such a course is far from easy, for these people are most difficult to hold without tangible evidence of improvement. They become easily discouraged and wary of all medication.

Various remedies have been devised during the last few years, nearly all of which depend upon recumbency. Among the most important contributions should be mentioned the intravenous citrate solution therapy, which is used for the purpose of increasing the capillary hyperemia and of encouraging the formation of a collateral circulation. As described by Steel of Philadelphia in the *Journal of the American Medical Association*, February 12, 1921, "during the first month the patient is kept in bed. At 110° F., 250 c.c. of a two per cent. sodium citrate solution are given intravenously every second day. During the second month the interval of injection is lengthened to every third or fourth day; daily leg massage is given, and the patient is allowed to sit in a wheel-chair with the feet hanging down for a short time each day; or, if a mild case, some walking is allowed. At the end of a year the patient gets one injection every two weeks." By this method it is claimed that: (1) gangrene and spontaneous amputation of dead tissue is checked; (2) relief from pain after the second injection is obtained; and (3) quieting of the indolent, painful collateral circulation takes place. These are very broad claims, indeed, and it is most doubtful whether the cases which are seen in our clinics would respond as have those so reported. We are presumably dealing with a much more malignant form of thromboangiitis obliterans. At any rate no positive assurance is forthcoming that these cases as reported by Dr. Steel would not have improved equally well with recumbency, daily massage, and potassium iodide, which he uses in conjunction with his citrate treatment.

Forced fluids, with or without the use of a duodenal tube, as a means to the same end have been reported with equally good results; but such treatment is never given without the patient being under constant supervision or with the patient attempting to remain active and self-supporting.

There is one method used to increase capillary hyperemia and that is by the use of a tourniquet about the thigh several times a day for 15 minutes at a time. This method is now taught all cases seen in the orthopedic department of the Massachusetts General Hospital, providing no ulcerations or gangrene are present. Instruction is given in applying the tourniquet in order to obtain a maximum amount of hyperemia with the understanding that it shall be done only

when the pain becomes unbearable. Such precaution may not be necessary, but the risk of hemorrhage is too great to leave to an outpatient case, unprotected by medical aid.

Antispasmodic drugs, including benzyl benzoate, have been used at this clinic without success. Salicylic acid compounds have been used to control pain but are useless in advanced cases. Opium derivatives are out of the question because of the length of time they would have to be used. Local medication to ulcers has no effect as long as the patient is allowed to remain erect.

When ulcers appear amputation has been advised after a reasonable attempt at medication. Local amputations have been done in the past and a few good results have been obtained; at least, they have been sufficiently good results to make one hesitate in advising radical operation. But are we justified in prolonging the convalescence and period of inactivity of these patients by employing conservative means, when we realize that a considerable number of them will require further operation? Such treatment frequently prolongs inactivity, the very thing that the patient has been anxious to avoid. Each case is a problem unto itself, to be studied thoroughly from every side before any operative interference is attempted.

Multitudinous reports have been published giving data of success obtained by all operations, from amputation of the diseased toe to mid-thigh amputation. Nearly as many re-amputations have been found necessary from one cause or another. It is most discouraging to find, in a few days following operation, that the flaps have melted away; or to re-admit a patient within a short time because of an indolent ulcer on the stump caused by scar tissue, preventing the wearing of an artificial leg.

For these very good reasons it must become routine procedure to investigate the main arteries at the time of operation, and to amputate above the occlusion. This is going to require removal of the leg at the mid-thigh in many cases because, in those in which the disease has advanced far enough to cause indolent ulcerations, the popliteal vessels are frequently found occluded.

Such is the status of treatment as should be undertaken among the poorer classes of patients who are unable to spend the time necessary to conservative treatment requiring recumbency. For those who are financially able to spend the time, every form of treatment should be tried before amputation is advised.

Summary.—Thromboangiitis obliterans is a circulatory disturbance characterized by the gradual obliteration of the arteries and veins of the extremities, more especially the legs.

The cause of this disease, in the light of our present knowledge, is most likely an irritation by one or more of the chemical substances in tobacco smoke on an hereditarily unstable sympathetic nervous system.

The most important pathological process is an occlusive thrombosis of the blood vessels, the end-results of such a lesion being ulceration and gangrene.

We must have this disease constantly in mind in order to be able to isolate it from the various forms of foot strain.

We must always consider the shortest possible course of treatment when dealing with the wage-earner as a patient.

Exploration of the main arteries should always be done at the time of operation, and amputation performed above the occlusion.

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THE RELATION OF THE UROLOGIST TO CANCER.*

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THE urologist has reason to be proud of his ability to make a correct preoperative diagnosis. In proof of this I may say that the records of our service for the past year show an error of only 4 per cent. in the accuracy of our preoperative diagnoses. It is fair to state that this is the result not only of improvements in mechanical equipment and laboratory technic, but also in the ability to interpret the results of a careful examination.

On the other hand we are almost as far behind as ever in our ability to make an *early* diagnosis in cases of malignant disease of the urinary tract, this being due chiefly to the fact that the symptoms are often so slight as to be unnoticed by the patient, or to their neglect by both the patient and his physician. Little, if any, improvement is to be looked for in this respect unless, and until, we can gain the coöperation, not alone of the layman, but also and especially, of the layman's medical adviser.

When one considers that in spite of every advance in diagnostic acumen, in surgical technic, and in the application of radium and x-ray, the average mortality of tumors of the testicle is still about 80 per cent. in a 4-year post-operative period (Tanner, *Surg., Gyn. & Obst.*, November, 1922; that nearly one fifth of all obstructing prostates are malignant, that metastases are found in nearly one third of these cases when first seen, and that the average length of life is only about 3½ years from the date of the first symptoms (Bumpus, *Surg., Gyn. & Obst.*, January, 1921); that recurrence in tu-

*Read at a Cancer Clinic held at the Massachusetts General Hospital during Cancer Week.

mor of the bladder has been the rule in nearly half the cases where partial resection was done, and in over 80 per cent. in cases where the growth was merely excised (Gardner, *Trans. Am. Urol. Assoc.*, 1915); and finally that in malignant disease of the kidney only about 25 per cent. remain free from recurrence in a post-operative three-year period (Lindstroem, *Arb. a. d. path. Inst. d. Univ.*, Helsingfors, 1921, N. S. H., 299), it is obvious that something must be done and done promptly to improve this shocking situation. It is very satisfactory to be able to make an accurate diagnosis, but of what avail is it unless this diagnosis can be made at such an early time in the disease that reasonable hope of cure can be expected.

The fault lies sometimes with the layman, who is only human after all and is inclined to apply the *laissez faire* policy to his hematuria, but quite as often with his doctor who all too frequently administers some pills and lulls his patient into a sense of false security. Such, I am sure, is a dispassionate view of the situation as seen by those of us who handle this type of case. But lest I may seem too ready to shift the responsibility, I hasten to set forth certain attributes of maligant disease of the genito-urinary tract. It is unfortunately true that malignant disease of the internal genital and urinary organs may and often does, give rise to no symptoms whatever until it has advanced to a point where only palliative measures are to be considered. It is equally true that the external organs of generation, especially the testicle, but to a certain extent the penis as well, may be the seat of unsuspected or unrecognized malignancy. It is a common observation that even the intelligent layman may develop a serotal tumor of considerable size without being aware of its presence; it is equally true that his infrequently explored preputial sac may be the seat of a symptomless but indurated growth.

The difficulties and uncertainties of making an accurate diagnosis in tumors of the scrotum are known to every surgeon. This being the case and unless there is some other reliable means of excluding the possibility of new growth, I do not hesitate to advise early operation. Operative procedures on the scrotum are so easily done under local anesthesia and are attended with so little risk that the patient should most certainly be given the benefit of any doubt. Twice I have seen an apparently tuberculous epididymitis, a diagnosis which was concurred in on each occasion by a surgical colleague, turn out to be sarcoma of the testicle. In the one case orchidectomy was finally undertaken but at too late a time as shown by the ultimate fatal issue; in the other, orchidectomy was also deferred but has since been done with a happy result up to date. In other words when in doubt, operate on serotal tumors of a doubtful nature.

As to the penis any indurated lesion, especially if ulcerative, occurring at or after middle life, should not only be regarded with suspicion, but should also be investigated by the pathologist. It may also be said that in view of the fact that phimosis is found to accompany cancer of the penis in about 85 per cent. of cases, the simple operation of circumcision should be seriously considered as a prophylactic measure in any man with a tight prepuce and a tendency to recurrent balanitis.

I have already stated that cancer of the kidney, prostate and sometimes even of the bladder may pursue its insidious and symptomless course to the point where any possibility of a cure is out of the question. In these unfortunate and not infrequent instances the blame can be placed nowhere unless it be upon the neglect of frequent routine examination—a matter which I shall discuss later. On the other hand, the vast majority of patients with malignant disease of kidney, prostate or bladder, have at one time or another, during the progress of the disease, certain definite objective or subjective symptoms which, if taken seriously, might often lead to early diagnosis, prompt operation and reasonable expectation of cure. Perhaps the most prominent of all these symptoms is hematuria, gross or microscopic. Unlike the prisoner at the bar, the patient with hematuria should always be regarded as guilty of harboring malignancy until he is proved innocent. That this statement is not extravagant has been recently shown by Chute (Boston Med. and Surg. Jour., June 17, 1920) who, in an analysis of 100 cases of hematuria, showed that this condition was due to new growths of the kidney, prostate or bladder in 64 per cent. Although this writer is the most recent to discuss this important matter, he is by no means the first. Nor should we let the matter drop after reading his paper. Rather should we as a profession, having in mind the welfare of those who place their confidence in us, take the lesson of hematuria so seriously to heart that we shall not rest easy until the cause of the bleeding has been satisfactorily accounted for. Furthermore, so much publicity should be given to the importance of blood in the urine, both in the consulting room and the lecture hall, that every household will recognize the danger signal and seek competent advice. While new growths of the bladder are the most frequent source of hematuria, often without any other sign or symptom, malignant growths of the kidney are also perfectly capable of producing the same results.

In the case of the latter organ, however, the hematuria is frequently so profuse as to produce clots and the passage of these clots may give rise to renal colic, thus furnishing another clue to the gravity of the situation. Obstructive lesions of the prostate, whether benign or malignant, give rise to hematuria in a rather small percentage of cases, but as it is well known that the obstructing prostate is malignant in about

20 per cent. of cases, no time should be lost in the investigation of patients with this affliction.

It must not be forgotten, however, that there are other signs and symptoms which will aid in the early diagnosis of new growths of the urinary organs. The anemic, debilitated patient with a mass in his loin and a negative urine may have a hypernephroma; the middle aged man with nocturia and a slow stream, together with a mild pyuria and sciatica may have cancer of the prostate; the patient with slight cystitis and an indurated area at the base of the bladder may have a malignant growth of that organ. These signs may not, however, be so well defined; indeed, abdominal and rectal examination may be entirely negative, and there remains nothing but perhaps a little loss of weight, a little bladder irritability or a few pus cells in the urine. In other words, the signs may be slight and fleeting, to be discovered only after repeated and careful observation; the symptoms may be absent, slight or so atypical as to throw even the most wary off his guard. What, then, is the answer?

I believe that the value of annual or, better, semi-annual routine examinations cannot be too strongly stressed. In addition to the usual procedures this might advantageously include radiographs of the skeletal, urinary and respiratory systems, thus detecting metastases in lung or bone, together with any abnormalities in the shape, size or position of the kidneys; rectal or vaginal examination with a view to determining the status of the prostate, base of bladder and uterus; examination of the stools for occult blood. In cases where loss of weight, pain or tumor in the loin, renal colic, bladder irritability, indurated areas in prostate or base of bladder, or the persistence of blood or pus in the urine lead one to suspect the possibility of malignant disease, cystoscopic examination with investigation of the kidneys, if necessary, should be advised. It should be also remembered that if we were to go so far as to include a simple cystoscopic inspection of the bladder as a part of the regular routine, many new growths of that organ would be discovered which would otherwise pass unnoticed. It must be remembered that any neoplasm of the bladder is potentially, if not actually, malignant. This point might be explained to the patient, leaving him to decide what he wished to have done. During such a routine examination, inspection of the external genitals would be a simple matter.

A chain is as strong as its weakest link and in this instance the strength of my argument is broken by the fact that public opinion which, I am sorry to say, includes a large part of the medical profession as well, is not yet aroused to the desirability or necessity of such an overhauling. Unless some sort of efficient and persistent propaganda is undertaken by those of us who know the appalling situation, little or no progress in the early diagnosis of malignant disease of the genito-urinary tract is to be expected. It is true that the urologist can usually make a correct diagnosis if he has the opportunity, but as the situation is now, he finds himself trying to combat a situation the dismal picture of which has already been painted. It seems to me, therefore, that the only hope lies in a conscientious profession arousing itself to a point where it ceases to ignore the well known signs and symptoms of malignancy, and where it sees to it that the layman and his family are made thoroughly familiar with the situation which now exists and with the possibility of improving it.

INDICATIONS FROM THE EXPERIENCE OF THE FRAMINGHAM TUBERCULOSIS EXPERIMENT.*

BY DONALD B. ARMSTRONG, M.D., FRAMINGHAM, MASS.

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The Framingham work has been both an experiment and a demonstration. In the beginning, six years ago, it was essentially an experiment, with the following objectives:

1. To find out how much tuberculosis existed in the normal American community.
2. To discover the most effective means for the detection and treatment of tuberculosis.
3. To test the worth of widely used tuberculosis control measures.
4. To develop in conjunction with tuberculosis work a reasonably adequate general health program.
5. To ascertain the cost of such a program, and whether or not a typical community could be led to assume full financial responsibility for and leadership of such a program.

To accomplish these ends the chief measures adopted included:

1. The thorough medical examination of as large a percentage of the population as could be persuaded to go to their doctors for such an examination or who could be examined through other routine channels. Out of a total of 17,000 people it is now possible to say that over 13,000 have had a reasonably thorough medical examination. Seven or eight thousand were examined directly for the domonstration by the local physicians, or by the community consultation service administered by the demonstration, or with the help of outside tuberculosis specialists who came to the community temporarily to assist in medical examination campaigns—all of this work being essentially diagnostic in character.
2. The encouragement of the community,

*Address before Yonkers Tuberculosis Association, October, 1922.

through temporary subsidies or otherwise, to develop and direct adequate equipment and personnel for thorough-going health and disease prevention work through infant clinics, pre-school clinics, the public schools, the industries, etc. This means that every school child has had a thorough examination, that a large percentage of the industrial employees are compulsorily examined, thus supplementing the special medical examination work carried out early in the demonstration.

3. The establishment of a consultation service, whereby expert diagnostic resources are made available for the practicing physician, particularly for the examination and diagnosis of difficult or doubtful cases of respiratory disease. This consultation service has been of tremendous value in connecting up the patient with the doctor, in associating the patient with adequate treatment, and in relating the physician to higher scientific standards and methods of medical practice.

4. Associated with all this has gone a continuous educational campaign, teaching the principles of disease prevention as especially applied to tuberculosis, promoting personal hygiene, and, above all, emphasizing the importance of the periodic health examination of each individual in the community, so far as possible by his own private physician on an adequately compensated basis. This has helped greatly in the detection of early disease, in the promotion of healthful habits of living, and in the bringing to light of tuberculosis cases in the incipient period.

5. Finally, every effort has been made to work with and through established health agencies, to build up a community health program around official health leadership, and to find in the community the initiative and resourcefulness which will guarantee the continuation of the demonstration entirely under local auspices at the close of the experimental period. As a matter of fact that has been a continuous process from the beginning, and it was early apparent that the Framingham authorities were willing and able to assume full responsibility for the direction of all phases of the demonstration work. Correlative to this has been the gradual and indeed rather rapid assumption of the practical services by the local responsible health authorities. This applies to tuberculosis work in particular, and also to infant welfare work, school work, general community sanitation, etc. Parallel to this has been a development of practical services on the part of private agencies, particularly the industries, so that at the present time, with the exception of a few gaps in the existing machinery, and with the exception of the consultation service which the demonstration itself still carries, the Framingham health machinery may be said to be approaching a reasonably adequate standard.

Before discussing the more conspicuous results of this work, a few words as to the relationship of the work in Framingham to the medical profession may be pertinent. We are all conscious of the invasion which organized medicine, and which the social use of medical machinery is making into the old established private practice of medicine. It is our belief, however, that such intensive programs as are being developed in Framingham, and indeed elsewhere, point clearly to a great unoccupied field of private medical practice. Bear in mind that, in Framingham, out of the several thousand people examined, 77 per cent. were found to be suffering from illness or defect requiring medical or dental advice or treatment. All of these individuals were referred and urged to go to their own physicians for treatment. Then, too, as a result of the educational campaign, the practice of going to the doctor for a periodic health examination has been to a degree successfully established. It has been found, for instance, that 29 per cent. of a section of the population recently canvassed had been to their doctors for this purpose during the previous six months. The further extension of the health examination idea, involving the acceptance of this form of medical service by the public, and enthusiasm for the performance of this service by the medical profession, should lead very directly into a great field in which the service will aim at the detection of incipient disease, the promotion of personal hygiene, the provision of medical advice with reference to health habits, etc. In other words, it leads into the great unoccupied field of *the private practice of preventive medicine*. The demonstration has shown clearly the full significance of medical facilities to disease prevention; the eagerness of physicians to co-operate and aid in this work; and the mutual advantage of this form of practical coöperation between the physicians and the public.

While the demonstration is still incomplete, and while in the minds of the committee in charge of the work for the National Tuberculosis Association, it will take a longer period of time to determine accurately and finally what the ultimate effect of such a program may be upon morbidity and mortality rates, yet the results to date, during the first six years, have been so distinctly encouraging in a number of ways as to justify the utilization of this experience in the development of similar projects on a varying and perhaps wider scale. The more important of these results may be stated as follows:

1. The ratio of known active tuberculosis cases to tuberculosis deaths was increased during the first year of the demonstration from three to one to nine to one, thereby indicating that in many of our communities from one-half to two-thirds of the active cases are undetected and not under medical control.

2. The coöperation given by the local physicians increased the average annual number of tuberculosis cases reported from 13 to 39 during the first three years of the demonstration.

3. The increased effectiveness of the medical machinery, especially through the aid of the consultation service, increased the percentage of early cases discovered from 45 per cent. to 83 per cent. in the first three or four years of the demonstration

4. Through the increased popularization of adequate treatment facilities, the percentage of cases being sent away to hospitals or sanatoria for shorter or longer periods, increased during the first three years from 15 per cent. to 42 per cent.

5. As to the effect on mortality, the results to date have been very encouraging. The tuberculosis death rate for 1921, the fifth year of the demonstration, represented a reduction as compared with the predemonstration decade average, of 67 per cent. (the figures being corrected for residence and certification errors). This improvement is to be compared with a percentage of improvement of 18 per cent. for similar towns in Massachusetts. Further, if the last three years of the demonstration (1919-21) are averaged and compared with the preceding decade, the Framingham improvement is 46 per cent. as compared with 3 per cent. for the comparative, so-called "control" towns.

Of course, tuberculosis death rates throughout the country have been declining rapidly during the last few years. It has also been impossible to expose the rates for towns other than Framingham to the same degree of correction for residents and non-residents, etc. However, even with these limitations, the decline is so striking that the mortality experience even in this short five-year period is held by the committee in charge of the work to be genuinely significant. It is believed that the concentration of effort has stimulated acceleration of what may be considered the normal rate of decline. This seems to be borne out by experience in other communities where greater anti-tuberculosis and health effort, greater expenditures for health work have been associated with correspondingly accelerated rates of mortality reduction. While it will, in the minds of most observers, take a longer period of time to determine the ultimate effect of the Framingham health program, and while it may take several more years to be absolutely and mathematically sure of the concrete statistical interpretation of the results, it is believed that these preliminary findings, combined with the manifestation on the part of the community of its willingness to assume its local health obligations, constitute an extremely encouraging picture.

6. Finally, as to cost, it should be pointed out that the town of Framingham was spending approximately 40c per capita per year for health work at the time of the demonstration's initiation. By the gradual assumption of additional expense, the community, either through public or private funds, is now carrying a health expenditure of about $2.30.

It is further estimated that when all of the gaps are filled in, and when the consultation service is assumed in some way or other by the local agencies, the community will find that a practically complete health and tuberculosis program will be costing something in the neighborhood of $3 per capita per year. This additional burden has been assumed with practically no manifestation of hesitancy on the part of the community. Appropriations have been recommended by the Finance Committee and adopted by the town in annual meeting in practically all instances in unanimous fashion. The results in this field would seem to indicate that the typical American community is both willing and able to meet adequately its health obligations, and that public health when purchased in reasonably liberal quantities is a more than worthwhile investment.

COMPLICATIONS OCCURRING IN GONORRHOEAL URETHRITIS.*

BY ARTHUR H. CROSBIE, M.D., BOSTON.

THE field of this subject is so large that I will confine myself to the male entirely.

When gonococci gain access to the male urethra they adhere to the mucous membrane of the fossa navicularis. Here they multiply and invade the epithelial lining of the canal and whatever glands there are present. At the end of three to seven days, usually five, the so-called period of incubation has passed and a definite discharge of cast off epithelial cells, leucocytes, and gonococci appears. We have then the simple uncomplicated anterior urethritis. If we never had anything more serious than this to combat, our task would be easy. The complications of a simple anterior gonorrhoea are few and of slight import, whereas the complications of a posterior gonorrhoea are widespread and of grave importance. The gonococcus, however, is not satisfied to remain in the anterior part of the canal. It tends to progress along the canal to the deep urethra by continuity infecting the glands of the mucous membrane on the way and eventually in a large number of cases reaching the deeper glandular structures, the prostate and vesicles. It is only by the greatest care that we can prevent this involvement of the posterior urethra from taking place. I am sure that the generally accepted percentage of posterior involvement which is placed at 90 per cent. is too high. I know that in private practice patients who present themselves early

*Read before the Massachusetts Department of Public Health, Subdivision of Venereal Disease, October 18, 1922.

for treatment have very little trouble with posterior involvement. Certainly not more than 30 per cent. have it, and then in most cases it is only of a few days' duration and many times without symptoms. I think that most cases of posterior urethritis come either from neglect by the patient, which is the most common cause, or from too vigorous treatment by the physician.

The gonococcus having gained access to the prostate and vesicles we are in line for a wide variety of grave complications, either through the blood stream or by direct continuity. Having involved the posterior urethra the march of the gonococcus has not necessarily stopped. It may continue from the vesicles through the vas to the epididymis or it may continue through the bladder up the ureters to the kidneys. I feel sure that involvement of the ureters, and perhaps of the kidneys, is more common than we think. Of course, during the stage of gonorrhoea when there is much inflammation present any instrumentation is contraindicated. If it were not for this, I feel that with the cystoscope we would not infrequently find involvement of the ureters which was giving no more symptoms than those of a posterior urethritis. What makes one feel this way is the number of strictures of the ureter that we run across doing a routine examination of the kidneys. The infection by the gonococcus is by far the most common cause of stricture of the urethra and I see no reason why the same should not hold true of the ureter. As a careful examination of the kidneys is done more and more I expect that we will more often find a pyelonephritis caused by the gonococcus.

We will now take up in some detail the more common complications. As I said before, complications occurring in acute anterior gonorrhoea are few and simple. The gonococcus rarely or never gains access to the blood stream until it reaches the prostate and vesicles. We may consider as complications such things as oedema of the glands and foreskin, and bloody discharge. The treatment of these is merely to stop local treatment at once and have the patient soak the penis in water, as hot as he can stand, several times a day. Such conditions usually clear up quickly under this treatment. Follicular abscess occurring in the glands of the fossa navicularis is not uncommon. Some years ago I used to see a great many such cases, but it seems that of late I do not see so many. It may be due to the more intelligent treatment of today. Such an abscess generally takes care of itself rupturing into the urethra, occasionally on the outside. If an abscess of this sort needs to be opened it should be done through the urethra as there is danger of getting a very troublesome fistula if the abscess is opened from the outside. Sometimes following an infection of one of the glands a hard indurated kernel is left that can be felt attached to the urethra in the region of the frenum. The presence of this mass sometimes annoys the patient and he desires to be rid of it. It would look like a very simple matter to dissect this out under local anaesthesia, but it must be remembered that this nodule is directly connected with the urethra and in removing it the urethra will be opened. If this opening is carefully closed, all right, but otherwise a fistula will be left.

Inguinal adenitis occasionally occurs. These glands rarely break down and are easily controlled by either heat or cold. Paraphymosis of course is met with and this is easily dealt with. Chordee gives little trouble, provided the patient is taking frequent doses of tincture of hyoscyamus and potassium citrate.

When the infection reaches the prostate and vesicles we, of course, have at once a serious complication in itself as well as a source for many complications elsewhere. In most cases the immediate trouble is not very severe. There is usually increased frequency and tenesmus and in a few cases the symptoms are very marked with fever and prostration. Occasionally a fluctuant prostatic abscess appears. This, however, rarely demands surgical interference as it generally drains into the urethra, with the aid of light massage, or ruptures spontaneously into the rectum. If surgical drainage is demanded the abscess can be successfully incised either through the perineum or through the rectum. In my experience you are no more likely to get complications elsewhere in the very acute prostatic involvement than you are in the more mild and chronic cases. In an acute posterior infection I think that both the prostate and vesicles are involved although usually one side seems to be affected more than the other.

The treatment of acute inflammation of the prostate and vesicles must be guided by the severity of the symptoms. In some cases the symptoms are so slight that office treatment is all that is required. Until the acute stage is passed all irrigation should be stopped. Light massage of the prostate and vesicles, provided they are not too sensitive, and forced fluids generally suffice. Of course, the diet should be light, as in any acute gonorrhoeal infection. The quieter a person can keep the better. The very severe cases should be handled only in a hospital. Rest in bed, copious hot rectal irrigations, catharsis, and light massage, if the patient can stand it, about every other day. If there is retention the patient should be catheterized as often as comfort demands. This is better than using an indwelling catheter, as this always increases the inflammation. Hot sitz baths are always beneficial. As soon as the patient can stand it, anterior and posterior injections of a hot bland solution, such as potassium permanganate 1-5000, should be used every other day, followed by light massage. It must be remembered that after the acute stage is passed we are far from through. This

stage is always followed by a chronic inflammation of the prostate and vesicles, even though the discharge may be gone and the patient without symptoms. A long course of treatment for this must be instituted in order to prevent complications from this that may be years in coming. The treatment of chronic inflammation of the posterior urethra and prostate and vesicles I will consider later.

The next complication to consider is the one by direct extension from the vesicles along either one or both vasi to the epididymis. This may come at the time of the acute gonorrhoeal infection of the vesicles or it may come at any later time, even after the gonorrhoeal germs have died out and have been supplanted by other germs following in their wake. I have not infrequently seen such condition arise in a man who as a youth had a posterior infection which he supposed was cured. Frequently such a man has married and his wife has shown no signs of infection. Suddenly out of a clear sky, following a strain or dissipation, the man comes down with an acute epididymitis. In cases of this sort I am perfectly sure that there has been a mild chronic infection of the prostate and vesicles mulling along, just waiting for the proper stimulus to stir it up.

Under rest in bed and applications of ice all cases of epididymitis of this sort will get well. However, they tend to recur, especially when treatment of the prostate and vesicles is instituted. I have always been in favor of incision and drainage for all cases of acute gonorrhoeal epididymitis. I feel that it is the quickest way to rid the epididymis of its inflammation and that after it is done it is much easier to clear up the prostate and vesicles. Then, too, after epididymotomy there is never a recurrence during the treatment of the prostate and vesicles. I usually do not operate upon the mild ones, but I am perfectly sure even they would be improved by it. I remember hearing Dr. Francis Hagner say one day that the quickest way for a case of chronic prostatitis to reach a cure was to develop an acute epididymitis and have an epididymotomy done. There is a great deal of truth in this. Eight years ago, in my clinic at the Boston Dispensary, Dr. Augustus Riley and I began doing epididymotomies under local anesthesia as an outpatient procedure. We were led to do this by the difficulty of getting such patients admitted for hospital treatment. During the past eight years we have done several hundred cases under local anesthesia, with no disastrous results. I have seen a man drive up on an ice wagon, come in, and have an epididymotomy done, and go back to his wagon, more comfortable than when he came in. Some cases never lose a day's work. When the effect of the novocaine wears off, however, the patient is apt to have several hours of severe pain. All cases are advised to go home and stay in bed for two days, and then to report back to the clinic. In this way all cases can have the benefit of the operation. The method is simple and easy. One-half of one per cent. novocaine and adrenalin is used. The cord is thoroughly blocked off and some injected along the line of the incision. The testicle is shelled out of the tunica vaginalis and multiple punctures made in the indurated portion of the epididymis. I will not go into further detail, as you are all familiar with the operation. Here, too, we must remember that after the patient has recovered from his acute epididymitis our work has only begun. These cases all have infection of the prostate and vesicles, which must have long, vigorous treatment before a cure can be expected. Another argument in favor of early epididymotomy is the fact that the testicle is much more apt to functionate if these abscesses in the epididymis are drained than if they are left to resolve themselves with the formation of much cicatricial tissue.

Following further the direct invasion of the gonococcus, we find that as a rule there is little impairment of the bladder itself. In the acute posterior cases there is undoubtedly a certain amount of trigonitis. However, no permanent damage is done to the bladder. In the ureter the evidence we have is in the presence of strictures. As I said before, I am convinced that most of these strictures are of gonorrhoeal origin. The treatment of these, of course, is dilatation with bougies through the cystoscope. I have had two cases where it was necessary to make an incision in the loin and open the ureter in order to get satisfactory dilatation.

Infection of the kidney by the gonococcus, producing a pyelonephritis, probably occurs more often than we think. This type of pyelonephritis tends to get well if left alone, provided the kidney is not diseased already and has no obstruction to the outflow of urine.

Before passing to the metastatic complications we will consider briefly strictures of the urethra of gonococcal origin. Strictures occur, usually following severe infections. This, however, is not always true, as quite often one will find a stricture in a man who had such a mild infection years ago that he has almost forgotten it. It is not necessary here to go into the pathology of strictures, with which you are familiar. One point I do wish to bring out is our more intelligent handling of strictures. When I was house surgeon at the Massachusetts General Hospital, from 1905 to 1907, perineal section for stricture of the urethra was a very common operation. Today it is a rare one, and done only in the very severe cases. In practically all cases, unless there is acute retention—and even in many of them—it is possible to pass a filiform bougie. If a filiform can be introduced, then gradual dilatation can be done with such an instrument as the LaForte sound. This dilatation must be gradual or one will get

severe infection, as we did in the old days of divulsion of strictures. The end-result of gradual dilatation will be much better than as though an external urethrotomy had been done. There will be less scar tissue. Of course, it is occasionally necessary to do an internal urethrotomy in case a stricture tends to recur too often or is too rigid to dilate satisfactorily. In the presence of infection, however, one must use judgment about gradual dilatation. If there is peri-urethritis in the perineum or evidence of pericystitis, then nothing but radical incision with free drainage will suffice. This brings up a serious group of cases that one sees not infrequently in a genito-urinary clinic in the course of a year. It is generally the outcome of a neglected posterior stricture which has shut down and the infected urine has forced its way into the perineal tissue, or it comes from the trauma of ill-advised instrumentation where the urethra has been torn and the stricture shuts down tight. These cases come in usually very sick, with a bulging perineum, oedematous scrotum, and, not infrequently, evidence above the pubes of a pericystitis. A case of this sort must be handled with the greatest care to prevent a fatal outcome. Ether in these men is contraindicated. We have here embarrassed kidneys, the same as we have in prostatic obstruction. The anesthetic should be either local novocaine or spinal anesthesia. A free perineal incision should be made. On making the incision there often is an escape of a large amount of gas, which I at first supposed meant infection with the gas bacillus. In these cases, however, I have generally found the colon bacillus and never the gas bacillus. The promptness with which these wounds heal is also against such an infection. The urethra is opened and a large drainage tube inserted into the bladder. If there is inflammation above the pubes an incision is made on either side and the finger pushed through to connect this with the perineal incision. Following free drainage these cases are given a liter of salt solution by hypodermoclysis every eight hours until a satisfactory urinary output is reached.

We come now to the metastatic blood-borne complications. The most serious of these, and fortunately the rarest, is gonorrhoeal endocarditis, the termination of which is generally fatal. Dr. W. S. Thayer reports the study of 327 cases of acute endocarditis which came to necropsy. One hundred and seventy-six were tested, and it was found that 22, or 11.3%, were gonococcal. Of these 22 cases, in seven there was arthritis. These statistics lead one to believe that perhaps gonorrhoeal endocarditis is not such a rarity as we have thought.

Various types of arthritis are met with as the result of infection with the gonococcus and with the post-gonorrhoeal infections—that is, mixed infection of the prostate and vesicles in cases where the gonococci have disappeared. There are two types of gonorrhoeal arthritis, both of which tend to be monarticular and also tend to hit large joints, knee, elbow, ankle, and wrist. One type is the one caused by the toxins alone, and the other the more severe one in which the gonococci themselves invade the joints. Polyarthritis usually occurs in cases where the gonococci have disappeared and have been followed by a mixed infection of the prostate and vesicles. There may be no symptoms to point to the focus of infection, and the true source may be detected only from the history of an old infection and from the presence of leucocytes and bacteria in the material expressed from the prostate and vesicles. Another condition closely allied to arthritis is the blunt spur appearing on the os calcis, which is pathognomonic of the presence of gonorrhoeal toxin.

The treatment of gonorrhoeal arthritis is the same as acute infection of a joint from any cause. Occasionally it becomes necessary to open a joint, where there is much effusion, and wash out the fibrin. I feel safer to let an orthopedic surgeon handle the joint condition while I devote my energies to clearing up the focus of infection. I have tried out vaccines and have discarded them entirely. It is quite possible that I may be too radical in this, but I do know that vaccines alone will not rid a prostate and vesicle of infection. I also know that proper local treatment can in most cases clear up such an infection. If vaccines are used in connection with local treatment it is difficult to tell how much good the vaccines are doing. Operative treatment of diseased vesicles in cases of arthritis, I feel, should be reserved for the most stubborn cases where local treatment has failed. I feel strongly, too, that it is best to be radical and do an excision of the vesicles rather than to attempt mere drainage. The vesicles are made up of such a large number of sacculations that mere puncture of a vesicle is inadequate and necessitates local treatment after the wound has healed.

Let me now speak a word about the treatment of chronic posterior urethritis. It makes no difference whether the patient is suffering from arthritis or any of the multitude of symptoms of chronic infection of the prostate and vesicles, or any of the complications arising from such infection. We will take it for granted that the case has passed the acute stage where bland injections and no instrumentation are indicated. Let us pause and consider for a moment what we have to deal with. We have, as a rule, a long-standing infection of the prostate and vesicles. There is a chronic infection of the urethral glands, especially in the posterior urethra. Through the endoscope areas of redness like granulation tissue may be seen. Mucus may be seen emerging from the crypts of Morgani. A thing that has occurred in most

of these cases which we cannot see is a round cell infiltration of the submucosa which has changed a normally very elastic tube to a very rigid one. The posterior urethra is normally very elastic and it dilates easily to 38 or 40 French. In most cases with a chronic posterior urethritis, although there may be no stricture, the elasticity has gone, and an attempt to dilate at once to 38 or 40 French would produce a splitting of the urethra, with severe bleeding and the likelihood of extensive and dangerous infection. How, then, can we combat this condition? The answer is: A very gradual dilatation of the posterior urethra with the Kollmann dilator, carrying it, if necessary, as high as 45F., combined with irrigations with silver nitrate 1-4000 and massage. The dilating stretches up the openings of the urethral glands and empties them, and eventually will usually rid them of infection. Since persistent use of the dilator I have almost entirely discarded treatment of the glands through the endoscope. Certainly, touching these areas with strong silver nitrate solution through the endoscope is a waste of time. If after a long course of dilatation there are still discharging glands, these should be entirely destroyed by the electric cautery. Nothing short of some such radical procedure will accomplish the result. Let me outline briefly my procedure in such cases. As soon as the inflammation has subsided enough so that I feel that instrumentation is safe I pass sounds up to the point where they are snug in the posterior urethra. I use that as a starting point for dilatation. Each patient reports two or three times a week, never more than three. Once a week the dilatation is used, never attempting to gain more than one point over the week previous. This is combined with an anterior and posterior injection with silver nitrate 1-4000, given by hydrostatic pressure without catheter. If silver nitrate is too irritating potassium permanganate 1-5000 may be used. A thorough massage of the prostate and vesicles is then given. The other treatments for the week consist merely of irrigation and massage. If during the gradual dilatation a point is reached, which frequently happens, where there is bleeding, no attempt is made to pass this point until it can be reached without bleeding. I figure that from 38 to 40F. is normal, but, as I stated before, I not infrequently carry the dilatation in stubborn cases to the limit, 45F. This treatment should be continued until the secretion expressed after massage and the urine contain no pus.

I have tried to cover the salient points in a very large field with a few words. I hope the discussion will bring out many points that I have been unable to cover.

BIBLIOGRAPHY.

A. H. Crosbie and A. Riley: Epididymotomy for Acute Epididymitis as an Out-patient Procedure, May 6, 1915.
W. S. Thayer: Proceedings of Association of American Physicians, Jour. Am. Med. Assn., July 1, 1922.

Medical Progress.

PROGRESS IN CARDIOVASCULAR DISEASE.

BY PAUL D. WHITE, M.D., BOSTON.

PART II.

2. ETIOLOGY AND PATHOLOGY (*continued*).

The Athletic Heart. Although undoubtedly most cardiovascular symptoms in the athlete are due to effort syndrome, there has been much controversy about the effect of athletic activity on heart size. H. Herxheimer (*Klin. Wchnschr.*, 1922, i, 2286) has just made a very interesting preliminary report of orthodiagraphic studies made of the hearts of 171 trained athletes at the German Field Games of 1922. It was found that some had smaller hearts, some the same size, and some larger than normal non-athletes of the same size. On the average, however, the hearts were somewhat larger. The tabulation of heart size according to the type of athletic effort has proved of much interest:

1. Boxers. *Smallest hearts* (quite possibly by contrast to over-development of thorax).
2. Weight throwers, swimmers, sprinters and jumpers. Next in size. Normal average size.
3. Middle distance runners (½ to 2 km.). Normal average size.
4. Long distance runners (3 to 25 km.). Normal average size.
5. Marathon runners (42 km.). Next to the largest. And
6. Ski-runners. The largest of all, probably explained by the factor of high altitude in addition to the prolonged effort.

Heart Disease in Pregnancy. Beginning with Sir James Mackenzie's volume of 138 pages on "Heart Disease and Pregnancy," published by the Oxford Press, London, in 1921, there has been a renewed interest in the subject, particularly an attempt by internists acquainted with recent advances in the study of the circulation to apply their newly acquired knowledge to the pregnant cardiac patient. Mackenzie has been a unique figure, possessing as he does both expert knowledge of cardiovascular disease and a wide and long obstetric experience in private practice. He has made a good beginning in the accumulation of more accurate data regarding a condition which is but emerging a little from the chaos of vague and conflicting opinions of obstetricians. Few internists have ever shown much interest in the subject but now cardiac clinics are being established in lying-in hospitals and in the course of years Mackenzie's modest start should develop into extensive knowledge. Mackenzie has said that "no single sign shown by the heart itself, however abnormal it may seem, should be a bar to

pregnancy. Systolic murmurs, no matter in which area they are loudest, should never be a cause of anxiety in pregnancy. If they occur in hearts which show no other abnormal sign, and if the patient's response to effort is good, they should be ignored. If they are associated with other signs of heart disease, the prognosis should be based on these other signs and not on the systolic murmurs.

"The same rule applies to the irregular actions of the heart due to respiratory arrhythmia and extra-systoles.

"In women with easily excitable hearts, who suffer at times from pain of varying degrees of severity (the neurotic heart or the toxic heart), when the organ is normal in size or only slightly enlarged, the heart trouble constitutes no bar to pregnancy. This applies whether systolic murmurs are present or not.

"The form of heart disease which gives most occasion for anxiety in pregnant women is *mitral stenosis*. This usually has followed an attack of rheumatic fever. *In such cases great care must be taken to differentiate between dangerous and not dangerous forms of the malady* (Reviewer's italics)." Mackenzie goes on to say that in the latter case (the not dangerous form of mitral stenosis) pregnancy may be undertaken with fair prospect of safety.

W. W. Herrick ("Pregnancy and Heart Disease," read before the New York Association of Cardiac Clinics, October, 1921) (*Amer. Jour. Obstet. and Gyn.*, 1922, iv, 1) has sounded the note of conservatism and individual decision with no set rules in the judgment of a pregnant cardiac patient. He has reviewed the literature and analyzed 40 cases showing symptoms of myocardial insufficiency delivered in the Sloane Hospital during the two years from October, 1919, to October, 1921. He concludes that "an antenatal clinic is essential in detecting the early evidences of decompensation," that "the response to medical treatment of the average case of chronic valvular disease of the heart in pregnancy is satisfactory, and the same principles govern its treatment as govern the treatment of such cases not associated with pregnancy," that "the termination of pregnancy in the presence of chronic valvular disease of the heart is not a matter about which hard and fast rules can be laid down," that "if decompensation occurs early in pregnancy or if it does not respond to medical treatment, if it has occurred and been severe despite proper care in previous pregnancies and if the signs and symptoms indicate serious lesion, termination is usually wise," and "that the method by which pregnancy should be terminated is largely an obstetric question, the point of greatest importance being the guarantee of a short and easy second stage." Of his series of 40 cases at least tance being the guarantee of a short and easy matic" in type; one case showed auricular flutter and four cases auricular fibrillation. There were two maternal deaths, but none among the flutter and fibrillation cases. Of 10 fetal deaths, 3 occurred in cases with auricular fibrillation.

S. Neuhof (*Jour. Amer. Med. Assn.*, 1922, lxxix, 893), speaking before the Brooklyn Cardiological Society, said that "we possess at present no instrumental guide or tolerance test which can adequately measure the cardiac reserve of the diseased heart of the pregnant woman. Each case must be individualized, and the presence or absence of heart failure noted. The best clinical guide for heart failure is a detailed study of the physical signs. Cardiac neurosis, decompensation and endocarditis recurrences seem the best inclusive groupings of all types of cardiac symptoms that occur in pregnancy with heart disease. . . . When viability has been reached and decompensation is moderate or absent, Cesarean section, when skilfully and rapidly performed, seems to be well withstood by the diseased hearts of pre ant women." Labor, he states, should be shortened as much as possible. Ether is his choice of anesthetic.

A. Nelius (*Monatsschr. f. Geb. u. Gyn.*, 1922, lvii, 127) in a study of 53 cases of heart disease in pregnancy covering 12 years has found that it is almost impossible to foretell the outcome when a woman with heart disease becomes pregnant. The course may be favorable with a serious valvular defect and grave with an apparently insignificant heart lesion. A patient may have no trouble at one pregnancy even after grave disturbances at the preceding pregnancy. In general, however, the earlier heart failure occurs during pregnancy the graver the prognosis. Nelius believes in attempting to tide a patient along with medical care.

H. E. B. Pardee (*Jour. Amer. Med. Assn.*, 1922, lxxviii, 1188) (*Am. Jour. Obst. and Gyn.*, 1922, iii, 620) (*Amer. Jour. Med. Sci.*, 1922, clxiv, 847) has written of the fitness for pregnancy of patients with heart disease and of the treatment of cardiac failure during pregnancy. He states that "with proper management of these severe cases (with mitral stenosis) it should be possible to allow any woman with cardiac disease to try to have a baby and to feel that the risk she takes is not inordinately great. . . . A certain number of these pregnancies in severe cases will have to be interrupted in the interest of the mother's life before the child is viable, but the great majority of them can be carried through successfully." He states further that with proper observation and prompt operation severe failure should not occur during labor. Abdominal section is the operation of choice he says, provided a "low forceps" can not be done. By appropriate rest and digitalization he thinks that the present mortality of 25% for severe cases and 10% for all cases should be cut down. Pardee's observations are based on 35 cases, 30 of whom had mitral valve

lesions. He feels that there is some value in functional grouping by a dumb-bell swinging test (5 or 10 pounds 20 times from the floor to overhead).

M. R. Salaberry (*Sem. Med.*, Buenos Aires, November, 1921, xxviii, 137) has reported that all of 37 women with organic heart disease have passed through normal pregnancies without apparent damage and have now a total of 114 normal children.

S. C. Smith (*Jour. Amer. Med. Assn.*, 1922, lxxix, 3) has called attention to the fact that pregnancy does not cause cardiac enlargement, which is, however, simulated by upward displacement during the latter half of pregnancy by pressure from the pregnant uterus. He considers that definite cardiac indications for the interruption of pregnancy are rare. He adds the interesting observation that evidences of heart activity in a baby were observed for 3 hours and 24 minutes following stillbirth.

P. Werner and R. Stiglbauer (*Arch. f. Gyn.*, Berlin, October, 1921, cxv, 41) from a tabulation of 67 cases of pregnancy with heart disease consider that serious disturbances are apt to occur in case of a mitral defect. Two women died and a third required interruption of pregnancy.

From a study of a group of 102 pregnant women, soon to be published in this journal (Boston Medical and Surgical Journal), P. D. White and W. B. Breed have shown that practically the only problem of heart disease in pregnancy is that of mitral stenosis, since the rheumatic etiologic type is almost the only type of heart disease found in pregnancy and that is almost always represented by mitral stenosis. Only about 50% of all pregnant women with cardiac symptoms or signs have heart disease in the first place; hence accuracy of diagnosis is of the first importance in the study of the problem. In each individual case individual judgment has to be used. Some cases of heart disease (*i.e.*, patients with mitral stenosis) can go through pregnancy without trouble, and others cannot. It is unwise to consider mitral stenosis always a bar to pregnancy; if it is, practically no "cardiac" should become pregnant. However, of far greater importance than treatment is prevention. The reduction and final wiping out of rheumatic fever will reduce and almost eliminate the whole problem of heart disease in pregnancy.

3. Symptoms and Signs, Including Sounds and Murmurs.

Sir James Mackenzie (*N. Y. Med. Jour.*, 1922, cxv, 61) has again deplored the tendency of many physicians to overemphasize laboratory methods of study of cardiac disease at the expense of the investigation of symptoms. He wrote, "One result of this form of specialism is that medicine is kept in that rudimentary state, in which a laboratory device is regarded as representing the highest ideal." Such a statement applies hardly or not at all to those who have made a true study of the subject. It is true that Mackenzie has helped to maintain a healthy view of medical research, but two criticisms should be made of his rather extreme attitude. In the first place, he has tended to lose sight of the fact that it was largely through the use of an instrument of some precision—the polygraph—that he made some of his most notable contributions to medicine—by the analysis of the irregular pulse; and secondly he does not realize that the pendulum has already swung back to a fairly normal appreciation by careful observers of the just value of "instruments of precision" in diagnosis from the overdependence upon them at the time when they were being introduced years ago into the clinic.

Heart Pain. One of the cardiac symptoms attracting most attention at present is heart pain. Mackenzie has been in late years reviving interest in its study. D. D. Paulus (*South. Med. Jour.*, 1922, xv, 545) has said that "pain, often of a more or less paroxysmal character, is a frequent finding in heart disease, independent of angina pectoris. These pains are really protests from an overworked, inflamed or degenerated heart and may arise from the heart as well as the aorta." P. D. White (Boston Med. & Surg. Jour., 1922, clxxxvii, 721) has discussed the symptoms and signs of the failing heart. He has tried to differentiate the anginal from the congestive type of failure, but further study of heart pain is necessary in this connection. This study he is continuing. In discussing cases in which abdominal symptoms (so-called "gas pains") were the first evidence of myocardial insufficiency R. K. Barry (*Cal. State Jour. Med.* 1922, xx, 326) has cited 14 cases where the real nature of the disease had not been suspected either by patients or their physicians until the disease had progressed far toward a fatal termination. L. Ramond, E. Bandouin and Fouche (*Bull. de la Soc. Méd. des Hôp.*, Paris, November, 1921, xlv, 1545) have reported spontaneous rupture of the heart in a man 67 years old in whom a diagnosis of "liver colic" had been made because of epigastric pain with vomiting. S. A. Levine (*Jour. Am. Med. Assn.*, 1922, lxxix, 928) has discussed a series of 103 cases of angina pectoris. He contrasted the greater frequency of this symptom in males with the greater frequency of vascular hypertension in females. The disease is most frequently found in strong muscular people. Syphilis was diagnosed in only 6 patients. Seven had diabetes mellitus, five had gout, two had typical mitral stenosis, and two had rheumatic aortic valve lesions. The average blood pressure was 160.6 mm. systolic (with variations between 80 and 260) and 95 mm. diastolic. Physical examination of the heart in many cases

revealed no abnormality. Forty-seven of the 103 showed no murmurs. Only one showed persistent auricular fibrillation and yet 200 other patients with persistent auricular fibrillation were observed during the same time interval. Eleven cases showed distinct abnormal spreading of the Q-R-S deflections of the electrocardiogram and two fatal cases showed greatly diminished amplitude of all leads. The vital capacity record was of no help. Levine finally emphasized the importance of recognizing that cardiac infarction may simulate a typical acute surgical abdominal condition.

W. Frey (*Klin. Wchnschr.*, 1922, i, 1984) has discussed "angina abdominalis," first described, he says, by Schnitzler in 1901 and by Neusser and Ortner in 1902. The cause he states is angiosclerosis of intestinal vessels. He reports a doubtful case in a man of 58 years and gives a bibliography of German references to the subject "Dyspragia intermittens angiosclerotica intestinalis." Pezzi (*Méd.*, Paris, March, 1922, iii, 422) has considered as a wise procedure for anginal pains cervico-thoracic sympathetic resection as recommended by Jonnesco.

Paroxysmal Nocturnal Dyspnea. R. D. Adams (*Jour. Am. Med. Assn.*, 1922, lxxviii, 1876) has observed for at least one year 15 patients with paroxysmal attacks of dyspnea at night. The attacks occur at the time of the hypernea of Cheyne-Stokes respiration when slumber is the deepest about one hour after going to sleep. He considers the symptom an early manifestation of cerebral arterial disturbance in the bulbar region, involving the respiratory center, with cerebral arteriosclerosis as the chief factor. He has found that thyroid extract is better than morphine or caffein in controlling the condition.

A bibliographic review of 47 articles on *sympathetic and vasomotor disturbances* and periarterial sympathectomy has been published in the *Archives des Maladies du Coeur* in June, 1922 (xv, 387-407).

Observations on the pulse. R. Lyons (*South. Med. Jour.*, 1922, xv, 431) has emphasized the frequency and importance of *pulsus alternans;* he strongly advocates the blood pressure method for its detection. The reviewer, who called attention in 1915 (*Am. Jour. Med. Sc.*, 1915, cl, 82) to the frequency in the clinic of alternation of the pulse, considers, now as then, that it is a serious sign—in fact the most serious abnormality of the pulse. E. P. Boas (*Arch. Int. Med.*, 1922, xxix, 763) has discussed the nature of the so-called *capillary pulse*; it is not, he says, a manifestation of a pulsation of the capillaries, but is due to an exaggerated pulsation of the arterioles and possibly of the venules of the subpapillary plexus of the skin, in view of which it would be well to discard the term "capillary pulsation" and to speak instead of the "systolic flushing of the skin." A. Mougeot (*Presse Méd.*, 1922, xxx, 311) has written that a sudden rapid rise in the pulse wave may testify to aortic sclerosis which prevents the deadening effect of elastic aortic walls. He states that this sign is evident before auscultation and radioscopy give conclusive findings. Three other pulse signs found with aortic sclerosis, according to Mougeot, are increase in pulse pressure due to elevated systolic blood pressure, a relative hypertension in the legs, and an earlier appearance of the pulse wave in the femoral artery than in the radial.

Clubbed fingers in endocarditis. T. F. Cotton (*Heart*, 1922, ix, 347) has noted 63 instances of clubbing of the fingers in 798 cases of structural disease of the heart in pensioners of the recent war from the clinic of Thomas Lewis. Of these 63 cases, 44 proved to be clear instances of subacute infective (bacterial) endocarditis. The 44 patients, without exception, died within 17 months of the first diagnosis of the infection; postmortem examinations were made in 17, and in each one the diagnosis was confirmed. The diagnosis was doubtful in the other 19 cases. Forty-two of the 63 patients had aortic regurgitation alone.

Enlargement of liver and spleen in endocarditis. J. H. Arnett (*Am. Jour. Med. Sc.*, 1922, clxiii, 590) has discussed the results of 286 necropsy findings in endocarditis. He states that the spleen was often found greatly enlarged in patients who had died of acute or recurring endocarditis; this enlargement occurred independently of increase in liver size; infection was apparently the cause rather than congestive failure or infarction. He considers splenic enlargement an important diagnostic sign in acute and recurring endocarditis and often overlooked in physical examinations.

Pulmonary emphysema. An interesting discussion of emphysema of the lungs has been published recently by R. Stähelin (*Klin. Wchnschr.*, 1922, i, 1721). The strain of chronic emphysema on the heart tends to produce hypertrophy and failure of the right ventricle. The most simple type of emphysema is that resulting from bronchial asthma or chronic bronchitis where the obstruction to expiration results from a narrowing of the fine, especially the peripheral, bronchi by muscle spasm, as in asthma, or by swelling of the mucosa, as in bronchitis.

W. H. Rosenau (*Jour. Am. Med. Assn.*, 1922, lxxviii, 1783) has called attention to *pocking and stippling of the nails* in about 95% of cases after acute rheumatic fever and chorea, in 70% of active tubercular cases, and in only 4.5% of normal controls.

Heart murmurs. D. C. Parmenter (*Jour. Am. Med. Assn.*, 1922, lxxviii, 1680) has written of the occurrence and significance of systolic murmurs among 590 Harvard athletes. His conclusions are that "the systolic murmur in the pulmonic area, even in an individual with unstable blood pressure and other signs which might disturb a physician, is a physiologic phe-

nomenon which is yet to be explained. Such murmurs need not bar men of the college age from strenuous exercise under some strain. Exercise under these conditions has seemed to improve rather than harm the health of these men, and has served at the same time to demonstrate that they are not quite so efficient physically as those without demonstrable or producible murmurs." G. Turrettini (*Arch. d. Mal. d. Coeur*, 1922, xv, 489) has described an unusual transmission over a large part of the body of a mitral systolic murmur in a young woman due to the enormous size of heart which was in almost direct contact with the spine. E. E. Irons and A. F. Jennings (*Jour. Am. Med. Assn.*, 1922, lxxviii, 957) have reported three cases showing the so-called presystolic murmur of mitral stenosis with no narrowing of the mitral valve postmortem; all were young male adults with tachycardia; they died of miliary tuberculosis, lung abscess and peritonitis respectively. One other case at postmortem examination showed a very large heart with normal mitral valve after death from heart failure probably due to syphilis; this patient had shown a presytolic murmur. In the first three cases at least the absence of the characteristic diastolic murmur of mitral stenosis should have discounted the finding of the presystolic murmur, which is not after all the characteristic murmur of mitral stenosis.

Interesting reports have been published on the reproduction and magnification of heart sounds by means of the audion amplifying tube by M. J. Myres (*Jour. Am. Med. Assn.*, 1922, lxxviii, 100) and by M. Philippson (*Arch. d. Mal. d. Coeur*, 1922, xv, 375). It seems reasonable to hope that by the work of such men, and especially through that of professor Horatio Williams of New York City, we may have at length the means of accurate reproduction of heart sounds and murmurs for permanent record both photographically and phonographically, and for demonstration in the class room and in the lecture hall.

4. BLOOD PRESSURE.

A bibliographic review of 62 articles on blood pressure appeared in the September number of the *Archives des Maladies du Coeur* (1922, xv, 646-676.

P. Blume (*Ugeskr. f. Laeger.*, 1922, lxxxiv, 1126) studied the blood pressure during sleep in 20 men, 20 women and 10 children. The difference between the systolic pressure awake and asleep averaged 15 mm. in 8 men with a systolic pressure under 120, and 21 mm. in 13 women with pressure under 116, the average systolic pressure dropping in the latter to 89 in sleep. When the pressure was high, the difference averaged 31 mm. in the 12 men, and 39 mm. in the 7 women. A. Dumas (*Arch. d. Mal. d. Coeur*, 1922, xv, 495) has found that both hypertension and hypotension are more marked in the lower than in the upper extremities. In 40 cases with hypertension 34 showed higher blood pressure in the leg than in the arm; the other 6 with lower leg pressures all showed cardiac insufficiency. R. Fabre (*Thèse*, Bordeaux, 1921) has again come to the support of the oscillometric method of sphygmomanometry as compared to the auscultatory method. He claims that oscillometry shows vibrating liquid below the brassard at times for as much as 20 mm. above the pressure at which occurs the disappearance of the sound of the pulse wave. A criterion of the oscillometric systolic blood pressure is the intersection of the supramaximal and maximal oscillations.

Hypertension. J. H. Barach (*Jour. Am. Med. Assn.*, 1922, lxxix, 2140) has just published a good summary of the present status of our knowledge about essential vascular hypertension. He says that "there are three prominent factors in the etiology of most of the cases of essential vascular hypertension: heredity, infection, and endocrine disturbance. . . . Essential vascular hypertension is not a spontaneous occurrence. It may be discovered unexpectedly but it does not come on suddenly. Vascular hypertension occurs for brief periods as a physiologic response for many years before it becomes permanently established. Once arterial hypertension is permanently established it continues for a variable time." N. B. Foster (*Jour. Am. Med. Assn.*, 1922, lxxix, 1089) recommends for the treatment of essential hypertension reduction in weight, more games outdoors, less meat eating and less business drive. By restriction of salt the entire diet is automatically reduced. Beechini (*Riv. crit. d. Clin. Med.*, 1922, xxiii, 41) has reviewed the treatment of vascular hypertension and concludes that the best therapy consists of repose, both physical and mental, light diet, air baths, hydrotherapy and exercise. J. P. O'Hare (*Med. Clin. of N. Am.*, 1922, v, 1349) insists on the use of common sense in the interpretation and treatment of hypertension. J. R. Wiseman (*Jour. Am. Med. Assn.*, 1922, lxxviii, 409) recalls the reply of Oliver Wendell Holmes that "a man should pick his ancestors a hundred years before he was born" when asked how one might live to be seventy years of age. He states that no convincing evidence has ever been brought forward to show that red meats contain more extractives or are more harmful than white meats.

Hypotension. S. R. Roberts (*Jour. Am. Med. Assn.*, 1922, lxxix, 262) has reported a study of 440 cases of absolute and 145 cases of relative hypotension. He finds somasthenia, cardiac disease, tuberculosis, anemia, fever, trauma, hemorrhage, anesthesia and drug effects responsible. The pressure was lowest in secondary anemia, pellagra, neurosis and tuberculosis. This report is mentioned chiefly to show that

no notable advance has been made recently on the subject of hypotension.

5. X-RAY.

Recent reviews of Roentgen ray study of the heart have been published by H. Dietlen (*Klin. Wchnschr.*, 1922, i, 2097) and F. M. Groedel (*Deutsch. Arch. f. Klin. Med.*, 1922, cxxxviii, 144). Dietlen emphasized the value of the so-called heart-lung quotient, which is the ratio of the transverse diameter of the heart shadow to the transverse diameter of the lungs (known in America as the cardiothoracic ratio). Dietlen states that the normal average ratio is 1/1.92 or approximately ½. He speaks of the errors sometimes found in the use of this ratio due to abnormalities of the shape of the individual. He has published a summarized table of the normal heart size in transverse, long, and broad diameters as well as in surface areas in men and women of varying size, with the figures of the heart-lung quotient. He concludes with the statement that percussion should still take the first place as a method of estimating heart size; that the x-ray should be used simply as a control of percussion. It is the opinion of the reviewer that on physical examination greater accuracy in determining heart size is obtained by determining the point of the maximal apex impulse in the erect position than by percussion. Almost invariably where the maximal apex impulse can be seen or felt its distance from the midsternum will accord within a centimeter with the left border of heart shadow by x-ray. Groedel has discussed the estimation of heart function by Roentgen examination. One point of interest that he brings up is the finding of a dark shadow in the hilus region of the lung, indicating stagnation in the circulation, which he reports as the only early sign of "failing compensation" of the heart. L. Delhern and R. Chaperon (*Presse Méd.*, 1922, xxx, 358) have reviewed the boundaries of the median shadow in the dorso-ventral roentgenogram. The right border they state has four parts from above downward; at the top the right innominate vein; below it the superior vena cava; below that the right auricle; and lowest of all the inferior vena cava. The left border has five parts: at the top the sternum; below that the aortic arch; then the descending aorta; next the pulmonary artery; and finally the left ventricle. The left auricle is shown only if it is hypertrophied, they believe, coming in between the pulmonary artery and the left ventricle. W. A. Bloedorn (*U. S. Naval Medical Bulletin*, Washington, 1922, xvi, 219) has written that owing to great unexplained variability of the heart there will always be difficulty in judging the size of the individual heart under observation. Any conclusion, therefore, as to the relative size of a heart, based on comparative dimensions or ratios, is apt to be wrong and should be applied clinically with great reserve. P. Ramos-Casellas (*Jour. Am. Med. Assn.*, 1922, lxxix, 1406) has cited the value of revealing the cardiac apex by the production of a large gas bubble in the stomach by the employment of Seidlitz powders.

6. OTHER METHODS AND TESTS.

Percussion. W. Gordon (*Lancet*, 1922, i, 68) has written in defense of the determination of heart size by percussion. He writes that "in the erect position it is possible by percussion to define the rightward and leftward limits of the heart with sufficient accuracy to make this means of diagnosis at least as valuable as it has always been considered, and that in the recumbent position no such accuracy can be attained, indeed no accuracy at all since the results of percussion fall far short of the true width." A. Lehndorff (*Wien. Arch. f. inn. Med.*, November, 1921, iii, 45) recommends the use of a large metal ring fastened to a long handle and pressed down hard into the skin around to prevent the spread sideways of the vibration from a percussion stroke in the centre.

Plethysmography. Liebesmy and Scheminzky (*Wien. Arch. f. inn. Med.*, 1922, iv, 11) have reviewed the plethysmographic tests of heart functioning. They state that they are not a reliable index of the functional capacity of the heart, testifying simply to the instability, irritability and sensitivity of the vasomotor system.

Sphygmobolography. H. Sahli (*Schweiz. Med. Wchnschr.*, 1922, lii, 425) has elaborated further his old method of the study of the circulation by the sphygmobolometer. He deplores the neglect of this method of his. It has not been found, however, of practical value in the clinic.

Exercise Tests. F. W. Peabody and C. C. Sturgis (*Arch. Int. Med.*, 1922, xxix, 277) have studied the effect of exercise on metabolism, heart rate and pulmonary ventilation of normal subjects and patients with heart disease. They have found that "exercise which was severe enough to cause a corresponding amount of dyspnea in normal subjects caused the same type of changes in oxygen consumption, pulmonary ventilation and heart rate in cardiac patients, but they were greater in degree. The response to exercise of patients with heart disease was qualitatively the same as that in normals; their greater liability to dyspnea depends on a *quantitative limitation*. . . . It is suggested that the two factors which account for the greater dyspnea in the cardiac patients are the inadequate circulation which results in a delayed elimination of carbon dioxide, and the necessity for shallow breathing which necessitates a relatively large pulmonary ventilation." T. B. Barringer, Jr. (*Jour. Am. Med. Assn.*, 1922, lxxix, 2205) has advocated again the study of exercise tolerance in heart disease. H. H. Brit-

tingham and P. D. White (*Jour. Am. Med. Assn.*, 1922, lxxix, 1901) have found that one of the few satisfactory exercise tolerance tests is applicable to a limited type of case and even there gives little information of the actual cardiac condition.

Vital Capacity. Considerable interest has been shown in the study of vital capacity in relation to the heart. C. D. Christie and J. D. Beams (*Arch. Int. Med.*, 1922, xxx, 34) have studied the effect of posture on the normal vital capacity in 290 normal men and women. They found that there was 5.5% less vital capacity in the lying than in the sitting position, while obese women had 15% less on the change from the sitting to the recumbent position. They found that individuals of the same sex and weight varied greatly in vital capacity, the figures much more nearly agreeing when comparison was made by sex and height. C. A. Stewart (*Am. Jour. Dis. Child.*, 1922, xxiv, 451) and M. G. Wilson and D. J. Edwards (*Jour. Am. Med. Assn.*, 1922, lxxviii, 1107) have written of the diagnostic value of determining vital capacity of the lungs of children. They feel that the estimation is of distinct clinical value from the study of the diseases of the heart and lungs. Wilson and Edwards state that a reduction of 15% or more from the average normal should single the child out for further physical and x-ray examination. They found a normal standard of 1.93 liters per square meter of surface area, allowing a plus or minus 10% deviation, from a study of a representative group of 362 children from 6 to 16 years of age and that a normal standard of 15.5 c.c. for each centimeter in height is another method of relating the vital capacity measurement. A. W. Hewlett and N. R. Jackson (*Arch. Int. Med.*, 1922, xxix, 515) have studied the vital capacity in a group of college students. They have found great variability in normals.

C. K. Drinker, F. W. Peabody and H. L. Blumgart (*Jour. Exper. Med.*, 1922, xxxv, 77) have studied the effect of pulmonary congestion on the ventilation of the lungs in experimental animals. The congestion was produced by compression of the pulmonary veins at their junction with the left auricle. They have shown that intravascular blood can encroach markedly on the pulmonary air space. This finding is probably applicable particularly in mitral stenosis where the vital capacity may be reduced without actual pulmonary edema. R. Burton-Opitz (*Jour. Am. Med. Assn.*, 1922, lxxviii, 1686) has studied the vital capacity of "cardiacs." He has found that the vital capacity is normal unless there is cardiac insufficiency. He cites 15 cases, mostly mitral stenosis. The range of vital capacity was from 860 c.c. above normal to 275 c.c. below normal; all but three were above normal. H. L. Ulrich and M. H. Nathanson (*Minn. Med.*, December, 1921, iv, 721) have studied the vital capacity of the lungs in cardiac disease. In cardiacs they found that the vital capacity is definitely reduced as compared with the calculated normal figures. They state that "it was quite evident that cardiac impairment is accompanied by reduction in vital capacity which is neither slight nor questionable, but very definite and unmistakable. . . . The most probable explanation of the reduced vital capacity is a loss of the normal lung elasticity due to stasis in the pulmonary circulation." M. G. Wilson and D. J. Edwards (*Am. Jour. Dis. Child.*, November, 1921, xxii, 443) have found that in children "vital capacity measurements show a close relation to the heart functional capacity as gauged by the exercise tolerance." They found wide variations from the normals in 85 normal children studied. J. H. Pratt (*Am. Jour. Med. Sc.*, 1922, clxiv, 819) has reported long continued observations on the vital capacity in health and heart disease with some interesting charts covering years. He considers vital capacity estimation useful in the study of an individual case of heart disease.

C. Cameron (*Tubercle*, 1922, iii, 353, 385) has studied the vital capacity in pulmonary tuberculosis. He found no ill effects in the course of six thousand observations. He states that the vital capacity is reduced in pulmonary tuberculosis, a fact of considerable importance in the diagnosis of doubtful cases, but he warns that other lung conditions than tuberculosis may cause reduction. Generally speaking the vital capacity is reduced in proportion to the grade of the disease and increases when improvement takes place. He gives warning, however, that the vital capacity is of restricted value in estimating the work capacity of the victims of pulmonary tuberculosis since a patient with early active tuberculosis may have a higher vital capacity than a person with arrested disease who can do a fair amount of work, but who has considerable scarring of the lungs. R. M. McKean (*Am. Jour. Med. Sc.*, 1922, clxiii, 710) has described a case of hepatic tumor with pulmonary metastases and very few pulmonary signs who showed a lowered vital capacity of the lungs. Diagnosis was confirmed by postmorten examination. F. W. Peabody and C. C. Sturgis (*Arch. Int. Med.*, November, 1921, xxviii, 501) have discussed the effect of general weakness and fatigue on the vital capacity of the lungs. They state that the "vital capacity of the lungs in patients with great physical weakness, but without disease of the heart or lungs, was found to be not more than 26% below the normal standards. In heart disease the vital capacity may be as much as 75% below the normal standards." They tested 13 people with pronounced weakness, 11 of them with pernicious anemia, one with secondary anemia and

one with typhoid fever. "These observations," they say, "indicate that general muscular weakness and fatigue of the muscles of respiration are not important factors in causing the reduction of the vital capacity of the lungs in heart disease." H. H. Brittingham and P. D. White (*Jour. Am. Med. Assn.*, 1922, lxxix, 1901) have reviewed numerous cardiac functional tests. Most of them they consider of small value. Two were selected for further study. "Vital capacity determinations," they say, "add to the exactness of records but give little aid in the clinical study of a patient." They found that 50% of ward patients with no demonstrable pathologic conditions in the heart or lungs had vital capacities of 20% or more below the so-called normal. They also found that vital capacity and exercise tolerance determinations were markedly at variance in 14% of the cases in which both tests were performed. They concluded that there is no satisfactory test of cardiac functional capacity at the present time and consider that "judgment in the interpretation of the general reaction of an individual to the habitual activities of his or her life (such as ascent of stairs) affords the physician more valuable information as a rule about the circulation than the use of any of the functional tests described."

Record Charts. A. E. Cohn (*Jour. Am. Med. Assn.*, 1922, lxxviii, 1559) has described clinical charts recommended by the Association for the Prevention and Relief of Heart Disease for the statistical study of a large series of cardiac patients. These are very complete, one chart being devoted to the medical history of the patient, another to physical examination, a third to the social history, a fourth to the hospital history and a fifth to a follow-up record. It is planned by these charts to make an intensive study of the relationship of heart disease to infectious diseases, to occupations, to heredity, and to methods of treatment, with a careful study of physical signs and laboratory data.

(To be concluded.)

The New England Surgical Society

LOCAL AND GENERAL ANAESTHESIA IN STRANGULATED HERNIA.*

BY EDWARD P. RICHARDSON, M.D., F.A.C.S., BOSTON.

The kind of anaesthesia used in cases of intestinal obstruction has appeared in my experience a definite factor influencing the recovery or death of a given patient. Cases of intestinal obstruction, however, vary so much in type and course that the effect of any one factor is difficult to determine. Further, the form of anaesthesia which can be used is frequently limited by the nature of the case. In internal obstruction local anaesthesia may not permit the necessary exploration and intra-abdominal manipulation. If spinal anaesthesia is used, the anaesthetic level must often be produced so high as to introduce a definite risk from the anaesthetic itself.

The strangulation of bowel in a hernia produces a condition as truly intestinal obstruction as results from any cause within the abdomen. It is only a question of time before the symptoms of ileus develop. The pathological condition existing is not only more uniform than in internal obstruction from unknown cause, but it is far easier to deal with surgically. Ordinarily the location of the obstruction to the bowel is not in doubt, the obstructed loop is readily accessible, the pathological condition varies in degree rather than in kind, the affected bowel is walled off more or less completely from the general peritoneal cavity, and lastly, either local or frequently spinal anaesthesia can be used as readily for operation as general anaesthesia. On account of this greater uniformity and the freedom of choice in anaesthesia available, it would seem possible to estimate the relative value of different types of anaesthesia more readily in strangulated hernia than in intra-abdominal conditions causing obstruction.

Given a cause of intestinal obstruction as obvious, as well understood, and as readily relievable by surgery as strangulated hernia, one would suppose in these days of rapid transportation that the results of treatment would be satisfactory. That is the impression I had before reviewing these cases, and is, I think, the feeling of most surgeons. In so clear-cut an emergency, when so many people are saved from almost certain death, a mortality of about 15 per cent. does not make the impression it should on the operator. As will be shown later there is room for distinct improvement. This improvement would come most effectively by shortening the time from onset to operation, but in so familiar a condition we cannot expect a change along these lines. Nor can we expect much improvement in general in operative technic. The question is whether by a wider use of local anaesthesia the mortality can be reduced.

Ether anaesthesia has seemed to me unsatisfactory in intestinal obstruction for the following reasons. Patients with ileus take ether badly, and vomiting is not infrequent. The vomitus may be considerable in amount, consisting of septic fluid passed back from the intestine into the stomach. Washing out the stomach as a preliminary to anaesthesia does not entirely obviate this difficulty as the stomach may refill during operation. Even if actu-

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al vomiting does not occur, regurgitation of this fluid through the relaxed cardia may take place. Inhalation of the septic fluid may lead to broncho-pneumonia and even to drowning. Further, ether interferes with intestinal peristalsis. It is not infrequent for a patient who has active peristalsis before ether anaesthesia to show no evidence of peristalsis after operation. A patient in a precarious condition from obstruction often changes markedly for the worse during ether anaesthesia. For this reason operation must be made as brief as possible and it is often wise to omit measures such as anastomosis following resection.

It is a commonplace that many cases of strangulated hernia do perfectly well with ether anaesthesia. Many are operated on before the symptoms of ileus develop. The cases needing resection of a gangrenous loop of bowel are relatively few. On the other hand, except in children, practically all herniae, even if very large, may be operated on by means of local or regional anaesthesia. In inguinal or femoral hernia spinal anaesthesia can be readily used. A general anaesthesia is only exceptionally necessary. If by avoiding general anaesthesia we can save occasional cases, the use of some other form is well justified.

It is probably true that a good many cases at the time that they present themselves for surgery are beyond help by any method. Even if it were possible to wish away the strangulation and the gangrenous loop of bowel, some of these would still promptly die from the damage already done by the toxemia. Still there remain cases in a precarious condition in which the type of anaesthesia may well be the deciding factor.

Among 29 cases of strangulated hernia containing bowel, on which I have operated, exclusive of one case of obturator hernia, there have been 5 deaths, 4 of which occurred following ether anaesthesia, making a mortality rate of 17.2 per cent. The first death took place ten years ago in a woman of seventy-four with a femoral hernia strangulated for four days. Operation was done in a farmhouse under ether anaesthesia, the gut was viable, but during the operation the patient vomited feculent material. An arthritis prevented turning her head on one side. She died in six hours. Here the ether contributed clearly to the death. Local anaesthesia would have given a chance of recovery. A second death occurred in a woman of fifty with a large umbilical hernia strangulated for two days. She was operated on in an out-of-town hospital where there was inadequate equipment for local anaesthesia. My judgment was that she was in sufficiently good condition to warrant anaesthesia with ether. She took ether badly and vomited during the operation. The hernia contained omentum and several inches of deeply congested bowel. She came off the table with moaning expiration and marked evidence of epigastric distress. She died in four hours.

A third death occurred in a man of fifty-five, for whom a left inguinal hernia had been reduced in a doctor's office. He was then lost track of until five days later when he was admitted with marked evidence of intestinal obstruction. Nothing suggestive of a strangulated hernia could be found on examination. As I did not feel sure that the hernia was the cause of the obstruction, a low median incision was made under ether anaesthesia. This revealed a knuckle of bowel still constricted by the internal ring of a left inguinal hernia which had been reduced *en bloc*. The internal ring was divided, the bowel, which was viable, freed, and the ring sewed up from within. The intra-abdominal part of the operation took only two or three minutes. Death occurred within twelve hours. I doubt whether this patient would have recovered even if the inguinal canal had been explored with local anaesthesia.

A fourth death occurred in a woman of forty-five with a femoral hernia strangulated for a week. The bowel was necrotic and friable. Death occurred seven hours after resection and anastomosis under ether anaesthesia. Although I now feel that this operation should have been done under local anaesthesia, I do not believe that recovery would have taken place in any event.

On the other hand, I believe that the avoidance of ether anaesthesia contributed to the recovery of the following cases.

A man of eighty-eight with a femoral hernia strangulated for two days, which showed on operation under spinal anaesthesia necrosis of the bowel at the points constricted by the hernial ring. The necrotic areas were infolded.

A woman of fifty-six, with marked symptoms of obstruction, who had a large umbilical hernia strangulated for three days: operation was done with local novocaine anaesthesia.

A woman of seventy-eight, who developed a strangulation of a femoral hernia during an attack of acute bronchitis. Relief of the constricted bowel under local anaesthesia was followed by a good convalescence.

A woman of forty-five, in whom five inches of gangrenous intestine due to strangulated femoral hernia of two days' duration was resected, with end-to-end anastomosis, under spinal anaesthesia with apothesine.

The only death under local anaesthesia occurred in a man of fifty in whom the sigmoid flexure had been strangulated for four days in a right inguinal hernia, and was gangrenous. Death from peritonitis and obstruction as shown by autopsy took place two days after enterostomy.

Since my personal series of cases is small, I have attempted to find the relative mortality of strangulated hernia, under various forms of an-

aesthesia at the Massachusetts General Hospital from 1912 to 1921 inclusive.* From this series it is evident that local and spinal anaesthesia were used only as a general rule in cases which the operating surgeon considered bad risks, either from the age of the patient or from the existence of preoperative complications. The clinical impression which leads a surgeon to consider a patient a bad risk cannot be represented in figures, and an analysis of a series of cases therefore lacks this valuable element. The results obtained from the series must be interpreted in relation to the absence of what is really the important point.

Of 217 cases classed as strangulated hernia, 15 have been omitted because examination of the records showed no strangulation to exist. Of these one died. In ten cases the strangulation was reduced by taxis, or slipped back during the operation. In 23 cases the hernia contained only acutely incarcerated omentum with more or less evidence of interference with its blood supply. Of these none died. One case of perforation of the ileum while the hernia was down, due to a kick, and one acute incarceration of the bladder in a direct inguinal hernia have also been omitted.

There remain for consideration 167 cases of strangulated hernia containing bowel, with 27 deaths, a mortality of 16.2 per cent.

Table I gives the general mortality of each type of hernia.

TABLE I.—Showing Operative Mortality and Frequency of Necrosis of Bowel According to Type of Hernia:

	Sex			Frequency of Bowel Necrosis		Operative Mortality	
	Male	Female	Total	No.	P.C.	Died	P.C.
Epigastric	3	0	3	2	66	1	33
Ventral	3	7	10	0		1	10
Umbilical	2	15	17	6	35.9	7	41.2
Femoral	16	27	43	12	28	8	18.6
Inguinal	90	4	94	6	6.4	10	10.6
			167	26		27	16.2

This table shows that the greatest mortality occurs in umbilical, femoral and perhaps epigastric hernia. The frequency of necrosis of the bowel is roughly parallel to the mortality. It is important to note that necrosis of the bowel occurs from four to six times more frequently in femoral and umbilical than in inguinal hernia. The figures also show the great predominance of strangulated inguinal hernia in the male, and of umbilical and to a lesser extent femoral in the female.

Table II shows the mortality of the different forms of hernia under the different types of anaesthesia. The mortality under ether anaesthesia is about half that under local anaesthesia, which is slightly exceeded by that of spinal anaesthesia.

Too few cases were operated on under gas oxygen for any conclusions. They happened to be cases in which the strangulation was of short duration.

TABLE III.—Age of Patients Operated on Under Different Types of Anaesthesia. Showing Also the Age at Which Resection Was Necessary, and Deaths Occurred:

Age	Ether	Local	Spinal	Necrosis of Bowel	Deaths
1- 9	12				1
10-19	5				1
20-29	15			1	1
30-39	15		3	5	5
40-49	18	3	1	5	2
50-59	25	10	10	10	8
60-69	8	11	10	2	5
70-79	3	6	2	1	3
80-89		1	2	2	1
90+			1		
	101	31	29	26	27

Table III shows the ages of the patients operated on under the various forms of anaesthesia. From this it can be seen that 88 per cent. of the cases operated on under local and spinal anaesthesia were fifty years old or more, as against 35 per cent. of the cases operated on under ether. It also shows that strangulation of a hernia is principally an accident of middle life, or beyond, and that necrosis of the bowel rarely is present at the time of operation under thirty years of age.

The average approximate duration of the strangulation in the cases operated on under ether was thirty-two hours, under local thirty-six hours, and under spinal forty-five hours. The cases with marked preoperative complications were almost without exception operated under

*I wish to express my thanks to the members of the Surgical Staff for the use of their cases.

TABLE II.—Deaths According to Kind of Anaesthesia and Type of Hernia:

	Inguinal		Femoral		Umbilical		Ventral		Epigastric		Total		Mortality
	Cases	Died	Cases	Died	Cases	Died	Cases	Died	Cases	Died	Cases	Died	Percent
Ether	59	3	25	3	9	4	6	0	2	1	101	11	10.9
Gas Oxygen	4	0	1	0	0	0	1	0	0	0	6	0	0
Local	14	3	8	2	6	2	2	0	1	0	31	7	22.6
Spinal	17	4	9	3	2	1	1	1	0	0	29	9	31
	94	10	43	8	17	7	10	1	3	1	167	27	16.2

local or spinal anaesthesia. These three factors—age, duration of strangulation, preoperative complications—should be taken into consideration in interpreting the greater mortality in the groups operated on under spinal and local anaesthesia. To this should be added the clinical impression indefinable in figures, but more or less obvious on examining the individual case records, which led the surgeon to judge a patient a bad risk and to avoid ether.

One class of cases may be considered to be more or less uniform. These were the cases which showed necrosis of the obstructed loop. In these cases the use of local and spinal anaesthesia shows a slight but distinct advantage over ether as shown in Table IV.

TABLE IV.—Cases Requiring Resection or Enterostomy for Necrosis of the Bowel, Classed According to Type of Anaesthesia.

	Cases	Recovered	Died	Mortality Percent
Ether anaesthesia	11	3	8	72.7
Local and spinal anaesthesia	14	6*	8	57.1

This table shows somewhat better results in the cases in which ether was not used.

There is still discussion as to whether if gangrene of a loop of bowel is present an immediate resection and anastomosis should be performed, or whether enterostomy should be done, postponing anastomosis until a second stage when the immediate effects of the obstruction have been recovered from.

Table V gives the comparative results under the different forms of anaesthesia of resection and immediate anastomosis, and of resection and enterostomy, postponing anastomosis until a later stage. Under the latter method, the deaths occurred, with two exceptions, before anastomosis could be performed.

TABLE V.—Comparative Mortality of Immediate Anastomosis Following Resection and Enterostomy with Anastomosis Delayed to a Second Stage:

	Resection and Immediate Anastomosis		Resection, Enterostomy with Delayed Anastomosis	
	Recovered	Died	Recovered	Died
Local	1	0	0	2
Spinal	3	5	1	2*
Ether	1	4	2	4
	5	9=64.3%	3	8=72.7%

*See footnote to Table IV.

From this table it can be seen that the better results under local and spinal anaesthesia followed resection and immediate anastomosis, and under ether enterostomy and delayed anastomosis. The results of immediate anastomosis under ether are particularly bad.

The records further show that age has a marked influence on recovery or death when resection is required for necrosis of the bowel. The cases under fifty showed a mortality of 50 per cent., those over fifty of 80 per cent.

So much for the facts of the situation as far as they can be shown by figures. But figures cannot show in a series of cases operated under various forms of anaesthesia, in which the worse risks were habitually chosen for local or spinal anaesthesia, the true relative values of the different forms of anaesthesia. What I believe is this: the individual case stands a better chance of recovery with operation under local or regional anaesthesia than under ether. Local or regional anaesthesia can be used satisfactorily in almost any case of strangulated hernia, except in children. Spinal anaesthesia may be used in inguinal or femoral hernia. It presents no marked advantages over local anaesthesia, and has the disadvantage of greater risk and greater depression of blood pressure. These risks are increased when the anaesthetic level has to be high enough to include an umbilical hernia. An ideal choice of anaesthetic would exclude all deaths from the cases operated on under general anaesthesia with ether. That this situation has been approached in the present series is shown by the greater mortality among the cases operated on under spinal and local anaesthesia. Necrosis of the bowel and death are more frequent in umbilical, epigastric and femoral hernia, and these cases especially should be operated on under local anaesthesia.

With regard to immediate or delayed anastomosis following resection for gangrene, I believe this to be a matter chiefly dependent on the form of anaesthesia used. If it is ether, every minute counts, and it may be wise to tie Mixter tubes in the ends of the bowel, and postpone anastomosis for some days.

If, on the other hand, the operation is done under local or spinal anaesthesia, the time taken in doing an anastomosis is of slight importance, as it can be done without discomfort and without shock. Under these conditions, I believe it is better as a rule to do an immediate anastomosis, not only because it obviates a disagreeable fistula, but because the chances of recovery seem to me to be somewhat greater.

Exception may be made to this in the rare cases of necrosis of the large bowel, partly because anastomosis is somewhat more difficult and more likely to be followed by leakage than in the small intestine, and partly because a temporary colostomy is better tolerated than a higher intestinal fistula.

If following an anastomosis of the small intestine, the duration of the strangulation or the degree of toxaemia make an immediate enter-

*One case dying as the result of second stage anastomosis eight days after primary enterostomy is classed as a recovery for anaesthesia used in primary operation, but a death for the method.

ostomy advisable, I believe that this can best be done by inserting a catheter in a loop of intestine above and inverting the bowel wall around it by two purse-string sutures, or by a method similar to the Witzel gastrostomy. When the bowel wall is thus inverted around a catheter, prompt closing of the sinus usually follows its removal, and no further operative procedure is necessary.

In conclusion I can only say that I believe the higher apparent mortality in cases of strangulated hernia operated under local and spinal anaesthesia is explained by the fact that the bad risks were picked out for these methods. My personal experience leads me to conclude that local or regional anaesthesia should be the routine method used in strangulated hernia, and that ether should in general be avoided.

REPORT OF A SERIES OF ANAESTHESIAS IN A SMALL HOSPITAL.

BY HALBERT G. STETSON, M.D., GREENFIELD, MASS.

The present paper is based upon a series of 145 unselected major operative cases occurring within the past three or four years, showing the methods used in carrying out anæsthesia, and the results which follow. Nothing more has been accomplished than can be brought about by anyone who is willing to take an interest in the work. The demonstrated fact that these results can be produced with ordinary care, and with no expensive and complicated apparatus, and that similar results are not produced as often as they should be is the excuse for the paper of today.

The technic really begins when the patients enter the hospital, and if possible, patients who are to be given an anæsthetic in the morning should enter the hospital the night before. By so doing, they become accustomed to the routine of the hospital to a slight extent; at any rate it is not quite as new to them. Their preparation with us is simple and consists in the serving of a light evening meal, an effort to procure a good night's sleep, no food after the evening meal and no fluids after six in the morning. We seldom give a cathartic, but early in the morning these patients are given a series of enemata until the water returns clear, showing that the lower colon has become cleaned out. About an hour before the time set for the operation, all adult patients are given 1-6 grain of morphine with 1-150 grain of atropine, and at the same time are asked to empty their bladder. In all pelvic operations in women, the bladder is catheterized just before they go to the operating room, in order to be sure that it is empty.

Before the anæsthesia is begun, these patients are assured that they have nothing to fear, that they are to breathe naturally, that they are not to take long breaths or to breathe rapidly, but that they are to breathe naturally as though about to go to sleep, that if they follow these simple directions they will have no choking sensations, and that the anæsthetic will not be pushed, but that plenty of time will be given them to go to sleep naturally. The room in which the anæsthetic is given is closed and only those people actually needed are permitted to remain in the room. No talking is allowed and it is desired that as little noise as possible be made in the rooms and corridors outside. The mask used is the ordinary oval wire frame that conforms to some extent to the shape of the face. Over this are fastened two thicknesses of gauze of coarse mesh constantly used for surgical dressings. Upon this mask ether is slowly dropped at a rate of fifty to sixty drops a minute. If the patient asks questions, these are answered as briefly as possible, and if they become disturbed and confused, as not infrequently happens, they are reassured. They are never asked to take deep breaths, to count, nor are they encouraged to talk. As unconsciousness occurs the rapidity with which the ether is dropped upon the face mask is increased somewhat, but never over seventy to eighty drops per minute in the ordinary case. As the patients begin to show signs of unconsciousness, a folded towel is placed about the base of the wire mask to lessen the waste of ether vapor in the space between the face and the mask. None of the patients are blindfolded.

Usually with this simple method patients are completely anæsthetized in from ten to twenty minutes, and with the consumption of not over two or three ounces of ether. No struggling has occurred and there has been no period of excitability and no suspicion of cyanosis. Our records show that in the 145 cases reported an average time of sixteen minutes was required to bring patients to the point of complete surgical anæsthesia.

From this point on, ether is given less freely but still by the same method. The anæsthetizer, however, keeps himself constantly informed, either by observation or inquiry, or by the promptings of the operator, as to the progress of the operation. Certain operations require notably less anæsthesia than others, gastroenterostomy or intestinal anastomosis, for instance, require almost no ether during the time consumed in making the anastomosis, but deep anæsthesia is required when there is any tension upon the mesentery, or in the process of closing the abdominal wall. In consequence, when the anæsthetist keeps informed as to the progress of the operation, he is able to govern the amount of ether given accordingly. Very little ether is given at the times when little ether is required, but the amount is increased when that period of the operation is reached requiring deeper anæsthesia. It is possible in this way to de-

*Paper read before the New England Surgical Society at Burlington Vt., September 22, 1922.

velop excellent team work between the operator and his anaesthetist, to the very great benefit of the patient.

It must, of course, be understood that not all patients follow out this, what seems to us, normal anæsthetic course. The period of excitability does occur occasionally, however careful the anæsthetist may be in his technic, and it also sometimes happens that the occasional patient requires much more than the usual time to become completely anæsthetized, but there is seldom any severe struggling on the part of the patient and there is almost never any cyanosis. The so-called struggling cases are almost always accident or emergency cases which have not been prepared by a twelve hours' residence in the hospital, which means much, and these patients not infrequently have more or less food or liquid in their stomach, which almost always delays full anæsthesia. In the occasional case it seems to be impossible to produce complete anæsthesia, and there is constant talking or struggling. These cases seem to be immune to the small doses and the open mask drop method will not avail. In these cases the open mask is discarded and the Blake inhaler is used in its place. This produces a much more concentrated ether vapor with less escape of the vapor beneath the mask. With this the period of excitability quickly comes to an end, and then the anæsthetist may or may not return to the use of the wire mask.

With the ordinary case, as has been said, two or three ounces of ether are usually sufficient to produce complete anæsthesia, and five to eight ounces are all that is required to carry the anæsthesia from beginning to end, the average amount in the 145 cases reported being 6.1 ounces. At the end of operation, patients are as a rule only very lightly under anæsthesia, and I have in a few instances seen patients raise up the back and buttocks from the operating table on request for the purpose of getting an abdominal binder or swathe beneath the back.

The recoveries from the effects of the anæsthesia are short, and in an hour they are perfectly conscious and rational and usually sleeping as a result of their preparative dose of morphia. Nausea is very frequently slight and vomiting does not occur in more than 50% of the cases. The occurrence of so-called surgical shock is almost never seen, so rarely in fact that many of our pupil nurses have never seen a case.

The technic employed in anæsthetizing children is somewhat different. Except in very young children, all are given the preliminary hypodermic of morphine and atropine in doses governed by their age.

When anæsthesia is begun, it is pushed at once and complete unconsciousness is usually brought about within two or three minutes. The slow giving of ether to children has, with us, been very unsatisfactory. There is bound to be a struggle and if ether is given slowly, the amount given is very much more than if it is pushed at once and let the period of struggling be brief. The amount of ether used in these cases is usually very small, from two to five ounces, and a few of ours have been carried through the entire operation with two to three ounces, and one case, a 3½-year-old child, required only one and one-half ounces for a thirty-minute anæsthesia for an appendectomy. Naturally, recovery from an anæsthetic of this character is very quick.

The 145 cases covered by this paper included nearly all the major operations commonly seen in a surgical service, such as appendectomies, prostatectomies, nephrectomies and nephrotomies, cholecystotomies and cholecystectomies, gastro-enterostomies, colostomies, resection and anastomosis for intestinal cancer, empyema, resection of glands of neck, bone plating, amputations, traumatic surgery, tendon and nerve suture, etc. All of the cases were major cases requiring complete anæsthesia for a greater or less length of time, most of the cases were adults and of all ages; a few were children. Most of the cases had been in the hospital for at least twelve hours and had received the usual pre-anæsthetic preparation. Nearly all had received a dose of morphine and atropine hypodermically one hour before ether was begun. Several have been emergency cases subjected to operation without previous preparation and a few without the preliminary injection of morphine and atropine. It will be seen from this that there has been no attempt to select cases for this report, but the cases have been taken as they came, in order that a fair average may be arrived at.

To these 145 cases there have been given 983½ ounces of ether, giving an average amount of ether given each case as 6.1 ounces. The average time required for inducing complete anæsthesia was sixteen minutes, the shortest time being one minute (two cases in small children), and the longest being thirty minutes (two cases, both being nervous women). The smallest amount of ether used was one and one-half ounces for an anæsthesia of thirty-two minutes for an appendectomy in a child of 3½ years. The largest amount was nineteen ounces for an anæsthesia of two hours and fifty-five minutes in a young man with an extensive incised wound of the palm of the hand necessitating a long search for tendons and the proper approximation of their divided ends.

From a study of these 145 cases it was found that:

1 case	required between	1 and	2	ounces of ether
3 cases	required between	2 and	3	ounces of ether
4 cases	required between	3 and	4	ounces of ether
19 cases	required between	4 and	5	ounces of ether
22 cases	required between	5 and	6	ounces of ether
21 cases	required between	6 and	7	ounces of ether
21 cases	required between	7 and	8	ounces of ether
21 cases	required between	8 and	9	ounces of ether
10 cases	required between	9 and	10	ounces of ether
7 cases	required between	10 and	11	ounces of ether

5 cases required	between 11 and 12	ounces of ether
3 cases required	12	ounces of ether
2 cases required	12½	ounces of ether
1 case required	14	ounces of ether
1 case required	15	ounces of ether
1 case required	19	ounces of ether

This list includes one hernia operation with an anæsthesia duration of forty minutes and four ounces of ether used; one hernia operation with an anæsthesia duration of fifty minutes and four ounces of ether used; one appendectomy with an anæsthesia duration of thirty-nine minutes and four and one-quarter ounces of ether used; one appendectomy with an anæsthesia duration of thirty-nine minutes and four ounces of ether used; one cholecystectomy with an anæsthesia duration of sixty-five minutes and four and one-half ounces of ether used; one salpingectomy with an anæsthesia duration of twenty-five minutes and four ounces of ether used; one oophorectomy with an anæsthesia duration of forty-two minutes and four and one-half ounces of ether used; one plating operation for fracture of the femur with an anæsthesia duration of seventy minutes and four ounces of ether used; and one hysterectomy complicated with an enormous amount of pelvic adhesions requiring an anæsthesia duration of two hours and ten minutes, and four and one-quarter ounces of ether used.

The following table shows the duration of anæsthesia in five minute periods, the number of cases in each period, the total number of ounces of ether used in each period, and the average amount of ether used per case in each period. This table is practically a résumé of the work performed in the whole series of 145 cases.

Duration of Anaesthesia.	No. of Cases.	Total Ounces Used.	Average per Case.
5 to 10 Min.	1	2½ ounces	2½ ounces
10 " 15 "	0	0 "	0 "
15 " 20 "	2	7 "	3½ "
20 " 25 "	2	14 "	7 "
25 " 30 "	7	31 "	4½ "
30 " 35 "	12	52¼ "	4½ "
35 " 40 "	10	55 "	5½ "
40 " 45 "	12	61 "	5 "
45 " 50 "	11	68¾ "	6¼ "
50 " 55 "	11	60½ "	5½ "
55 " 60 "	9	59¼ "	6½ "
60 " 65 "	8	61½ "	7½ "
65 " 70 "	8	62½ "	7¾ "
70 " 75 "	5	36 "	7 "
75 " 80 "	9	67 "	7½ "
80 " 85 "	6	54 "	9 "
85 " 90 "	5	39¼ "	8 "
90 " 95 "	6	53¼ "	9 "
95 " 100 "	1	7½ "	7½ "
100 " 105 "	4	35½ "	9 "
105 " 110 "	4	36½ "	9 "
110 " 115 "	4	46 "	11½ "
115 " 120 "	0	0 "	0 "
120 " 125 "	1	10 "	10 "
125 " 130 "	2	22 "	11 "
130 " 135 "	1	4¼ "	4¼ "
135 " 140 "	0	0 "	0 "
140 " 145 "	1	12 "	12 "
145 " 150 "	0	0 "	0 "
150 " 155 "	0	0 "	0 "
155 " 160 "	0	0 "	0 "
160 " 165 "	0	0 "	0 "
165 " 170 "	0	0 "	0 "
170 " 175 "	0	0 "	0 "
175 " 180 "	1	19 "	19 "
180 " 185 "	1	12½ "	12½ "

As was stated in the beginning of this paper, this is a report of what can be done, and of what has been done by an anæsthetist who is interested in his work and who desires to give his patients as little ether as possible and yet produce the desired results, and the results here stated are no better than anyone can obtain provided he has the some interest at heart. No claim is made for quickness in bringing patients to the point of complete surgical anæsthesia. The paper does try to impress the fact, however, that patients are brought to this point and from thence throughout their anæsthesia with a minimum amount of ether, with a minimum amount of struggling, with a minimum of cyanosis, and with a minimum amount of uncomfortable after-results, such as nausea and vomiting, which are unquestionably the results of poisoning from an overdose of ether. I particularly desire to call attention to the fact that ether as an agent for producing anæsthesia can be used by anyone at any time and anywhere, provided he has a proper knowledge of the drug and of its results when well given and when badly given. While a gas oxygen ether outfit will produce complete anæsthesia more quickly, and will undoubtedly carry out a prolonged anæsthesia with a much smaller consumption of ether, when given by a competent operator, than can possibly be done by the simple method outlined above, yet it must be remembered that such an apparatus is expensive in initial cost and in maintenance, and that even more important is the fact that unless a trained and competent operator for such an outfit is at hand, such an apparatus is fraught with far more danger to the patient than the so-called open drop method of inducing anæsthesia even in the hands of an untrained anæsthetist. From our own experience we are convinced that so-called surgical shock following the routine work of the surgeon is more often rightfully placed at the door of the incompetent anæsthetist than to the surgeon and his operation, however severe his surgical measures may have been. I am convinced that ether is an agent that, like morphine or any other poisonous drug, has its limitations as to dosage governed by many circumstances, but that it can be, and too often is, given in much too large and unnecessary doses, and without regard to its dangerous after-results. I believe that the personal influences brought about in a community of medical men, where the results of ether anæsthesia are so good as those brought out in

this paper, is a very great factor in stimulating all who give ether in that community to use care and to try to obtain equally good results. This has certainly been the case in our own community. I believe that we, as active surgical workers in the operative field and having younger men working under our direction as anæsthetists, should do all in our power to bring about a greater sense of responsibility in these men in the giving of anæsthetics, as well as a greater pride in the work well done, even though it is the junior interne's job, more's the pity.

DISCUSSION OF PAPERS OF DR. RICHARDSON AND DR. STETSON.

DR. CHARLES A. PORTER, Boston: I will say a word about local anesthesia. I am still convinced that the reason we do not use more local anesthesia is that we are too lazy to learn the technic, which requires too much care. The more surgeons use local anesthesia the more they will use local anesthesia. This is not an Hibernicism but a fact.

DR. JOHN BAPST BLAKE, Boston: The subject of anesthesia is always before us, and always important. Operating details, new methods of diagnosis, collection of statistics, are all important, but it is particularly appropriate to emphasize in New England and Boston the fact that the anesthetic is a part of practically every surgical procedure, and not infrequently it is essential in procedures which are non-operative; such as physical examinations and the temporary treatments of certain pain spasms, or convulsions. The position of the anesthetist is not only one of definite responsibility, but one which should be maintained with dignity as well as ability. The young man who is asked to anesthetize a patient is really given an honorable duty by the surgeon, one which he does not always fully appreciate. It is true that there has been a great deal of work done in Boston, and in Massachusetts, and New England on the subject of general anesthesia and on the details and modifications of both general and local anesthesia; but I agree with Dr. Porter in saying that not yet is enough local anesthesia used throughout New England, and probably throughout northern United States. In the old days, 30 or 40 years ago at the Boston City Hospital, Dr. Post investigated the possibilities of rectal anesthesia: it was dropped soon afterwards because of what then seemed unsurmountable dangers; and later Dr. Cunningham and others took it up and perfected it; I think it still has a place in a certain small number of cases. In some hospitals rough and ready methods of anesthesia are still unfortunately, in use; the anesthetic is at times given by a second-year medical student and the instructions are to use it freely. In spite of this, in at least one instance, postoperative complications are few. This, however, does not justify the absence of a trained anesthetist, or at least a definite method of instruction, in all institutions in which a medical undergraduate administers anesthesia. It is unfortunate to confirm the dangerous belief that anesthesia is always simple and always safe. The fundamentals and the risks of general anesthesia should be more thoroughly taught and insisted upon. It is, of course, obvious that both ether and chloroform are dangerous drugs; they have a toxic power which may be lethal; but these facts are too often not fully realized, or are forgotten. Not all the deaths which occur during anesthesia are due to the anesthetic alone, but many of the post-anesthetic complications have been erroneously attributed to other causes in which the method of anesthesia, or the anesthetic chosen, has really been to blame. In local anesthesia, on the other hand, we have at last a non-fatal drug, novocain. It takes much of the operator's time to do the local anesthesia satisfactorily, but it is essential to the comfort of his patient, and to his own advantage, either to produce the local anesthesia himself, or to be certain that the most efficient method is thoroughly and effectively carried out.

The anesthetist is usually as important in an operation as is the first assistant; occasionally as important as the operator; and in certain instances, more important than either of them. He should, therefore, be properly trained; he should never forget that the patient's life not infrequently rests in considerable degree in his hands. And he should be properly remunerated, assuming that he gives humane and efficient service.

DR. FRED B. LUND, Boston: In regard to Dr. Richardson's conclusions, I would say that for many years I have operated on all strangulated herniae under local anesthesia, no matter how large they are, or whether there was gangrene of the bowel or not. I am glad to say that my results bear out what Dr. Richardson has said—that it is better to resect and do end-to-end suture in case a portion of the bowel is gangrenous, than to tie tubes in both ends of the bowel and wait for results. Under local anesthesia there is no pain in handling the small intestine and no shock whatever attends a resection. After the bowel is returned to the abdomen, the wound can be sutured around a drain, and the relations are very much more favorable to recovery than two large glass tubes in the intestine. The worst thing that happens in some of the cases is a temporary leak, which usually heals itself and does not require a second operation.

DR. DANIEL F. JONES, Boston: It is unfortunate that Dr. Richardson's statistics have come out as reported by him, but there is no question in my mind but that all cases of intestinal obstruction should be done under local anesthesia if possible. Resection should be done at the first operation, when necessary, provided the patient is not too ill. A very important detail in such cases is an enterostomy by the Witzel method above the anastomosis. This is important because these cases have been obstructed for some hours or days, and no relief will be obtained for 24 or more hours because there will be a spasm of the bowel above the line of sutures which will prolong the obstruction. The enterostomy will also relieve the line of sutures from any gas pressure.

DR. FRANK H. LAHEY, Boston: I don't hold any brief for the professional anesthetist, nor is it possible ideally to always have the same anesthetist, but I do believe that the progress of surgery demands an attempt to organize a special group, and one of the most important individuals in that group I believe is the anesthetist. Now there are several facts in connection with this which are of importance in the operation. We are not apt to realize that after the

operation is started the control of the operation is in the hands of the anesthetist. It is he who must decide on the patient's condition. It is he who must decide whether the operation can be completed or not, and in him we must have confidence for the completion of the operation. For this reason we have attempted to organize an operating group and have the same anesthetist, and he has the opportunity to decide the patient's condition. Further, we believe that it is wrong to conduct an operation today without the ordinary anesthesia chart. Formerly the way to tell the patient's condition was to wait until the patient was in shock and then stop the operation and try measures to get him out of shock. Now, if the anesthetist runs his five-minute blood pressure throughout the anesthesia, he gets early warning as to the presence of shock and gives warning as to whether to stop the operation or not.

DR. RICHARDSON (closing the discussion): I am glad to have Dr. Lund's support in advocating immediate anastomosis in the average case rather than enterostomy with anastomosis delayed to the second stage. Resection of the bowel can be satisfactorily done without discomfort under local anesthesia. Dr. Jones' point about putting a catheter into the bowel above the anastomosis by a method which produces infolding of the bowel wall around the catheter, is of great importance in serious cases. This seems to me different from tying Mixter tubes in both ends of the bowel, and letting all the contents come out from the upper loop. I believe the use of local anesthesia in bad-risk patients, particularly in emergencies, is one of the great advances occurring today in surgery.

HERNIA FROM THE EMPLOYER'S STANDPOINT.

BY R. J. GRAVES, M.D., CONCORD, N. H.

1. The rapid increase in the amount of payments on account of hernia cases has been one of the chief sources of personal injury expense to industry in general, and particularly to the railroads.

2. Hernia, especially oblique inguinal, is seldom, if ever, due to a single shock or blow, but is a matter of slow development over a considerable period of time.

3. This fact, while upheld by the mass of authorities on the subject, is not admitted by a large group of physicians, compensation boards and laymen.

4. It is believed that if the facts are widely broadcast it will be of material assistance in bringing about a radical review of the present state laws regarding compensation in cases of so-called industrial hernia.

5. It is hoped that this Society will go on record as affirming the truth of the following:

a. True traumatic hernia is a very rare condition.

b. Hernia is practically always due to the pressure of a preformed sac or open pouch of peritoneum, to which is often added the presence of structural weakness in the neighborhood of the hernial orifices.

c. To establish a claim for compensation for hernia, the claimant should be able to demonstrate the following conditions:

1. It must appear suddenly.
2. It must be accompanied by pain and tenderness.
3. It must immediately follow some adequate accident.
4. There must be proof that the hernia did not exist prior to the accident.

6. The Medical and Surgical Section of the American Railway Association, through a special committee, has thoroughly investigated the subject of traumatic hernia, and has adopted the position outlined above. The report of this committee has been presented before numerous American and Canadian Societies, which have in turn adopted it.

In view of the fact that a considerable number of the members of the Society had already left, it was not deemed wise to take any action upon the above suggestions, but the following committee was appointed by the President to consider the matter and report the results of its deliberations at the next annual meeting: Dr. Robert J. Graves, Chairman, Concord, N. H.; Dr. Homer Gage, Worcester, Mass.; Dr. Frederic J. Cotton, Boston, Mass.; Dr. Arthur T. Jones, Providence, R. I.; Dr. Halbert G. Stetson, Greenfield, Mass.

DISCUSSION OF DR. GRAVES' PAPER.

DR. MICHAEL F. FALLON, Worcester: Appropriate to this subject I wish to call attention to a form of hernia, the traumatically induced hernia. In some parts of Europe, notably in Russia, it is well known that men have hernia induced, and this is done by professional operators who introduce an instrument like a blunt glove stretcher or even the finger, into the external ring and by pressure on the transversalis fascia and the floor of the canal and then following it up by strong emetics so that the patient may acquire a hernia. Now research work has been done on the cadaver, and it was found that hernias, both direct and indirect, could be brought about by such a procedure. I mention this because in this country we have so many of these people from Russia, as this obtains in Russia, where they want to be exempt from military service.

DR. ARTHUR T. JONES, Providence, R. I. This may not be appropriate, but I think it should be spoken of here—it concerns the United States Veterans Bureau regarding the possibility of the effect of active service in the war on a man who has developed an enlarged thyroid with marked exophthalmos and a marked condition of hyperthyroidism.

I have been called upon to state whether such a condition was produced by active service in the war and to fill out Government papers to that effect.

I could find nothing in the literature but recently I referred this matter to Dr. William S. Bainbridge,

who has been serving on the Allied Commission and representing the Army and Navy of the United States, compiling statistics and drawing conclusions on the surgery of the World War.

Dr. Bainbridge stated that he had at that time seven cases of hyperthyroidism at the Brooklyn Navy Yard Hospital which he considered were due to the strain of active service in the war.

Dr. Ralph H. Seelye, Springfield: I think we should be careful how we go on record regarding this subject—it is an important matter. We admit that most hernias are potential herniae—that there is more or less sac in the inguinal ring which may become by the weakness of the muscles and fascia a hernia. I don't exactly know whether Dr. Graves refers to traumatic hernia as hernia entirely caused by direct injury or hernia due to lifting, but our industrial herniae, a great many of them, come from lifting. Some of them come from direct violence. We must admit that herniae from lifting are pretty common, and even though they do not come suddenly and with immediate pain, they are apt to appear within a few days or a few weeks after such strains of lifting. I think there is no question but that many of these cases of industrial herniae are improper cases for compensation. A great many of them are cases where the herniae are old and where they have nothing to do with the occupation in which the man is engaged; but we must not fail to recognize that many of them are due to direct effort in heavy lifting in the occupation in which the man is engaged.

Dr. Charles A. Porter, Boston: There are a lot of people who lift in the world. A number of them contract herniae. Is it the lifting or a previous condition which makes the difference?

Dr. Robert J. Graves, Concord, N. H.: I believe it is the previous condition. We don't feel that we are responsible for a hernia from effort any more than we are responsible for a flat foot. It isn't that we are unwilling to pay compensation for a certain type of case. I spoke of the factors which enter into making a hernia the result of trauma. We have many claims from inadequate accidents. A doctor will go on the witness-stand and say the hernia was undoubtedly the result of the accident, and the jury are much more apt to believe him than to believe us. When it has been definitely determined or admitted at least—I think it has been determined—when it has been definitely admitted that the vast majority of herniae are of slow development, not from one sudden accident, then will come the time for discussing which cases are compensable and which are not.

The doctor spoke about intentional herniae; that is, herniae produced intentionally. There are many instances where men have taken blunt instruments and by repeated poundings in the inguinal region have produced atrophy of the parts so that a hernia developed. There is ground, I believe, for the statement that patients are often as safe without a truss as they are with one, that is in a certain type of hernia because of the atrophy resulting from the constant pressure.

I believe this is an important question. Whether this Society is willing to go on record I don't feel sure, but I think it wise that a committee be appointed from this Society to bring in a report regarding our position. The Western Surgical Society has adopted this American Railway Committee report in its entirety; and it is probably as good a report on traumatic hernia as has been produced. It is largely the result of Dr. Coley's work.

I mean by "traumatic herniae" those produced by direct violence.

Dr. P. E. Truesdale, Fall River: I would like to ask Dr. Graves if the companies with which he is associated have these men examined before they go to work.

Dr. Robert J. Graves: That is a difficulty. In the past many of the unions would not stand for such examinations. There is reason to hope that this condition of affairs will be changed.

Dr. P. E. Truesdale: You mean that the unions will not stand for it?

Dr. Robert J. Graves: Yes, that is, for certain men. The trainmen are examined, but the shopmen are not.

Dr. Charles A. Porter, Boston: Would the Society want me to appoint a committee with Dr. Graves as chairman to report on this subject of hernia at the next annual meeting?

Motion made that the President appoint a committee (number not stated) with Dr. Graves as Chairman, to report on the subject of hernia at the next annual meeting.

Motion seconded; carried.

Dr. Charles A. Porter: I will do so.

Society Meetings.

PROGRAM OF THE TENTH ANNUAL MEETING OF THE AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

To Be Held at Boston, Mass., Thursday and Friday, March 29 and 30, 1923.

Thursday, March 29.

First Session, 9.15 a.m., (Promptly).
Evans Memorial, Boston University.
80 East Concord Street, Boston, Mass.

1. Presidential Address. By George W. McCoy.
2. A Study of the Blood Groups of the Japanese, the Koreans and the Manchurians. By Dr. Fukamuchi (by invitation).
3. A Comparison of the Blood Groups of the American Indians and the Chinese. By Arthur F. Coca, and (by invitation) Olin Deibert.
4. A Comparison of the Sensitiveness of the Indian Race and White Race to Poison Ivy. By Olin Deibert, and A. M. Wigglesworth (by invitation).
5. Serological Classification of Hemolytic Streptococci. By C. Roos (by invitation),
6. Some Relations between Hydrogen Ion-

Concentration and the Antigenic Properties of Proteins. By I. S. Falk, and M. F. Caulfield (by invitation).

7. A Study of the Influence of Adrenalin in Histamine Poisoning and Anaphylactic Shock in Guinea Pigs and Rabbits. By Arthur F. Coca, and Ella F. Grove (by invitation).

Luncheon to Members in Evans Memorial.

Second Session, 2.30 p.m. (Promptly).

Evans Memorial.

1. Observations on Schick Toxin and Diphtheria Toxin-Antitoxin Mixtures. By Robert N. Nye.
2. Immunizing Effect of Injections in Guinea Pigs of Diphtheria Toxin with or without the Addition of Antitoxin. By Edwin J. Banzhaf, and William H. Park.
3. Immunizing Effect and Local Reactions and F. M. Huntoon.
   Caused by Injections in Mass of Diphtheria Toxin with or without the Addition of Antitoxin. By M. C. Schroder (by invitation), and William H. Park.
4. On Heterogenetic Antigen. By Karl Landsteiner, and (by invitation) Samuel Semms.
5. On the Antigenic Properties of Hemoglobin. By Michael Heidelberger (by invitation), and Karl Landsteiner.
6. The Ophthalmic Reaction in Atopic Coryza (hay fever). By Robert A. Cooke, and (by invitation), Albert Vander Veer, Jr.
7. Human Multiple Hypersensitiveness to Different Proteins of Horse Serum. By Sanford B. Hooker.
8. The Question of the Identity of Antibodies. By F. M. Huntoon.
9. The Bactericidal Action of the Blood of Rabbits Immunized Against Pneumococci. By Dr. H. Everett Smiley (by invitation).

Friday, March 30.

Third Session, 9.30 a.m. (Promptly).

Joint Meeting with the American Association of Pathologists and Bacteriologists,

Evans Memorial.

1. Comparison of Wassermann and Precipitin Reactions in Various Stages of Syphilis. (15 minutes.) By M. A. Wilson, and (by invitation) Rose M. Nedley, New York City.
2. The Wassermann Reaction in Leprosy, with Special Reference to the New Complement-Fixation Test. (15 minutes.) By John A. Kolmer, and (by invitation), Oswald E. Denney, Philadelphia.
3. Serological Factors of Natural Resistance in Animals on a Deficient Diet. (15 minutes.) By George H. Smith, and (by invitation) Isabel M. Wason, New Haven, Conn.
4. Further Studies in Local Streptococcus Immunity and Local Immunization. (15 minutes.) By Frederick P. Gay, and (by invitation) L. F. Morrison, Berkeley, Cal.
5. On the Mechanism of Botulinus Intoxication. (15 minutes.) Lantern slides. By J. Bronfenbrenner, and (by invitation) H. Weiss, Boston.
6. Serum Therapy of Botulinus Poisoning. (15 minutes.) By J. Bronfenbrenner, and (by invitation) H. Weiss, Boston.
7. Thermostable Antigens. (15 minutes.) By H. Gideon Wells, and (by invitation) Julian H. Lewis, Chicago.
8. The Loss in Strength of Several Lots of Diphtheria Toxin in Twenty Years. (10 minutes.) By John F. Anderson, New Brunswick, N. J.
9. The Cultivation of the Viruses of Rocky Mountain Spotted Fever and Typhus in Tissue Cultures. (15 minutes.) By S. B. Wolbach, M. J. Schlesinger, and (by invitation) Henry Pinkerton, Boston.

Luncheon to members of the Associations in the Evans Memorial.

Friday evening: The members of the Associations will hold a joint dinner at the Algonquin Club, 217 Commonwealth Avenue, at 7 o'clock.

Officers and Council: President, George W. McCoy; Secretary-Treasurer, Arthur F. Coca; Council, Arthur F. Coca, Rufus Cole, Frederick P. Gay, George W. McCoy, F. G. Novy, H. Gideon Wells, Hans Zinsser.

The Association is much indebted for all of the local arrangements to Dr. Benjamin White, who has kindly offered to advise members regarding hotel or boarding accommodations. Address: 375 South Street, Jamaica Plain, Boston 30, Mass.

THE AMERICAN ASSOCIATION FOR CANCER RESEARCH.

Program of the Sixteenth Annual Meeting, Boston, Mass., March 29 and 30, 1923.

March 29, 9 a.m.

Morning Session.

1. Report of the Council.
2. Some Principles of Inquiry into the Incidence of Cancer on the Pacific Coast. By Frederick L. Hoffman, of Newark.
3. Studies in the Microchemistry of Neoplastic Cells. By George L. Rohdenburg, and Otto F. Krehbiel, of New York.
4. Multiple Primary Malignant Neoplasms, with Report of a Case. By D. P. Secof, of New York (by invitation).
5. Endothelioma of the Pleura. By H. E.

Robertson, of Rochester, Minn. (by invitation).

6. Chemical and Cytologic Changes in the Blood of Patients with Carcinoma during Radiotherapy Combined with Dietetic Treatment. By Georgine Luden, of Rochester, Minn.
7. Vital Staining after Radiation. By Rosa E. Prigosen, of New York (by invitation).
8. Mitochondria in Tumors. By Francis C. Wood, and (by invitation) Angela C. Hartman, of New York.

Afternoon Session.

9. A Flexible Arrangement for the Radiation of One Patient Simultaneously with Three Tubes, and Its Advantages. By Wilhelm Stenstrom, and H. R. Müller, of Buffalo (by invitation).
10. Admantinoma. A. S. Warthin, of Ann Arbor.
11. The Incidence of Uterine Tumors in Mice. By H. Gideon Wells, Maud Slye, and Harriet F. Holmes, of Chicago.
12. The Essential Fundamental Differences between Spontaneous Neoplasms and All Artificially Produced Tumors. By Maud Slye, of Chicago.
13. The Mechanics of the Biological Effects of Rays. By W. T. Bovie, of Boston.
14. Histology of the Lymph-Nodes in Hodgkin's Disease, Leukemias, etc., before and after X-Ray Treatment. By Herbert Fox and D. L. Farley, of Philadelphia.
15. A Critique of Tumor Immunity. By William H. Woglom, of New York.

March 30, 9 a.m.

SYMPOSIUM ON THE PRESENT STATUS OF SURGERY AND RADIATION IN THE TREATMENT OF CANCER.

Some Random Notes on Cancer. By Willy Meyer, of New York.

I. Surgery:
1. The Operative Treatment of Cancer of the Breast. By Robert B. Greenough, of Boston.
2. Pathological Lesions in Which It Is Difficult to Decide as to Malignancy. By Joseph C. Bloodgood, of Baltimore.
3. Some Considerations of the Surgical Treatment of Cancer. By George H. Semken, of New York.

II. Radiation:
1. The Scientific Basis of Radiotherapy. By Francis C. Wood, of New York.
2. The Treatment of Primary Cancer by Radiation. By George F. Pfahler, of Philadelphia (by invitation).

Discussion to be opened by:
1. James Ewing, of New York.
2. Charles A. Porter, of Boston.
3. William Duane, of Boston.
4. Douglas Quick, of New York.
5. Burton J. Lee, of New York.
6. J. L. Yates, of Milwaukee.
7. Leo Buerger, of New York.
8. G. A. Leland, Jr., of Boston.

General discussion.

The meeting will be held at the Huntington Memorial Hospital, Huntington Avenue and Van Dyke Street, adjoining the Harvard Medical School.

A lantern and an operator will be available.

The meeting of the Association of Pathologists and Bacteriologists will be held, in conjunction with the Association of Immunologists, on March 30 and 31. Members of the American Association for Cancer Research are invited to attend the annual dinner of the Association of Pathologists and Bacteriologists, to be held at the Algonquin Club, at 7 o'clock on Friday evening, March 30, 1923. The price of the dinner is $4.00. Those who expect to be present are requested to notify Dr. F. B. Mallory, 116 Longwood Avenue, Brookline, Mass.

Authors are requested to hand to the Secretary, at the close of the meeting, short typewritten abstracts of their papers for publication in the Proceedings.

WILLY MEYER, *President.*
WM. H. WOGLOM, *Secretary,*
1145 Amsterdam Avenue, New York.

AMERICAN AND CANADIAN SECTION OF THE INTERNATIONAL ASSOCIATION OF MEDICAL MUSEUMS.

PROGRAM OF THE SIXTEENTH ANNUAL MEETING, AT THE THORNDIKE CLINICAL LABORATORY, BOSTON CITY HOSPITAL, BOSTON, MASS., MARCH 29, 1923.

ANNOUNCEMENTS.

The meetings of the Association will be held on Thursday, March 29, at 9.30 a.m. and 2.30 p.m., at the Thorndike Clinical Laboratory of the Boston City Hospital, Boston, Mass.

The Annual Exhibition of this Association, consisting of material illustrating the various items on its program, will be held on March 29, 30 and 31, for the benefit of the members of this Association and of the American Association of Pathologists and Bacteriologists and the societies meeting conjointly with them. The interest and value of this Exhibition is this year greatly enhanced by a large and important exhibit of war specimens from the Army Medical Museum, Washington, D. C., presented with the permission and by the courtesy of the sur-

geon-general of the United States army. Members of the American Association of Pathologists and Bacteriologists, American Association of Immunologists, and American Society for Cancer Research are especially invited to place on display in the Exhibition under the auspices of this Association the material illustrating their contributions to the programs of their meetings. Such material may be sent forward, charges prepaid, addressed to Museums Association, care of Prof. F. B. Mallory, Boston City Hospital, Boston, Mass.

The American Association of Pathologists will meet on Friday morning, March 30, in the Evans Memorial (conjoint meeting with the Society of Immunologists), and on Friday afternoon and on Saturday, March 31, in the Thorndike Memorial, Boston City Hospital. Members of this Association are cordially invited to attend and to take part in the discussions.

The Evans Memorial will furnish luncheon in the sun-parlor at 1 p.m. to the members of the societies meeting there and in the Thorndike Memorial at the Boston City Hospital, on Thursday and Saturday, March 29 and 31; and the trustees of the Boston City Hospital on Friday, March 30, in the Medical Library.

The Annual Dinner of the Association of Pathologists and Bacteriologists and its conjoint societies will be held on Friday, March 30, at 7 p.m., at the Algonquin Club, 217 Commonwealth Avenue. Price of dinner, $4.

The Annual Meeting of the Council will be held on Wednesday evening, March 28, in the library of the Boston City Hospital. A full attendance is requested.

(The Medical Department of Boston University and the Boston City Hospital adjoin each other, separated only by East Concord Street. The nearest car stop for both elevated and surface cars is at the corner of Northampton and Washington Streets. From Copley Square take a Dudley Street car; from the business districts take the elevated to Northampton street, corner of Washington Street, and alight there. The Boston City Hospital is only three blocks away.)

PROGRAM.

THURSDAY MORNING.

The Association will meet in the Thorndike Clinical Laboratory of the Boston City Hospital at 9.30 o'clock.

Transaction of Business.

Chairman's Opening Remarks. Minutes of Last Meeting. Annual Financial Statement. Report on Sir William Osler Memorial Bulletins.

Papers, Discussions and Demonstration Exhibits.

1. Exhibit of War Specimens from the Army Medical Museum, Washington, D. C. Presented by Authority of the Surgeon-General of the United States Army.
2. Exhibit from the Canadian Army Medical Museum:
   (a) Special methods of mounting.
   (b) Colored Drawings of Surgical Procedures in Wounds of the Chest. From Section on Chest Surgery. F. A. C. Scrimger, V.C. By permission of the Director-General of the Canadian Army Medical Services.

Photography.

3. True Color Reproduction of Pathological Specimens. (Illustrated by 34 Framed Pictures.) G. R. Callender, James F. Coupal and F. E. Prior, Washington, D. C.
4. A Background for Under-water Photography. R. R. Fitzgerald, Montreal, Canada. (By invitation.)

Museum Arrangement.

5. Symposium on the Classification of Museum Specimens. Introduced by Major James F. Coupal, Washington, D. C.; Maude E. Abbott, Montreal, Canada; Colonel Wilson, Washington, D. C.
6. Methods for Concentration of Museum Specimens. (Illustrated by Lantern Slides.) 10 minutes. M. Pollock, Rochester, Minn. (By invitation.)

Macroscopic Technique.

7. The "Battery" System for Preservation of Museum Specimens. (Illustrated by Lantern Slides). 10 minutes. H. E. Robertson, Rochester, Minn.
8. Further Experiences in Mounting Museum Specimens with a Minimum of Fluid. James Miller, Kingston, Canada.
9. Ultimate Results of the Gelatin Method of Mounting Specimens. W. H. Watters, Boston, Mass.
10. Disarticulation of the Human Skull. 15 minutes. E. L. Judah, Montreal, Canada.

Injection Methods.

11. Demonstration of the Vascular Bed of Kidneys by Means of the Celluloid Injection Method. (Illustrated by Mounted Specimens. Lantern Slides and Photographs.) A. Elmer Belt, Boston, Mass. (By invitation.)

Microscopic Technique.

12. A Simple and Rapid Method for Preparing Microscopic Bone Specimens. 5 minutes. Bela Johan, Budapest. (By invitation.)
13. A New Hone for Sharpening Microtome Knives. Carl V. Weller, Ann Arbor, Mich.

Bacteriological Technique.

14. The Warthin Molasses Plate Method as Used in the Pathological Laboratory of the University of Michigan. 15 minutes. A. S. Warthin, Ann Arbor, Mich.
15. A Modification of the Usual Method of Obtaining Postmortem Cultures. 5 minutes. H. E. Robertson, Rochester, Minn.

THURSDAY AFTERNOON.

The Association will meet at the same place at 2.30 p.m.

Photography.

16. Exhibits Prepared at the Army Medical Museum for the Academy of Ophthalmologists (large series of specimens and photographs).
17. Series of Intra-ocular Sarcomata. W. Gordon M. Byers, Montreal.
18. A Case of Osteosclerotic Anemia, with Specimens and Microphotographs. James Miller, Kingston, Ontario.
19. Calcification and Ossification of the Adrenals in a Child. J. R. Wilson, Boston, Mass.
20. Gross Demonstration of Adrenal Lipoid Changes in Pathological Conditions. W. J. M. Scott, Boston, Mass.
21. Two Cases of Mycotic Aneurysm:
    (a) Ascending Aorta, Gonorrheal Origin.
    (b) Descending Aorta, Pneumococcus Origin. Benedict Reifenstein, Boston, Mass.
22. Demonstration Exhibit of:
    (a) Mycotic Aneurysms.
    (b) Infective Pulmonary Endarteritis with Massive Thrombotic Vegetations Originating about the Pulmonary Orifice of a Patent Ductus Arteriosus (Two Cases). McGill Pathological Museum.
23. A Case of Myelogenous Leukemia with Large Leukemic Tumor Nodules. F. A. McJunkin, St. Louis, Mo.
24. Exhibit of Specimens of Hemochromatosis. F. B. Mallory, Boston, Mass.
25. New Accessions in Cardiac Anomalies (McGill Museum):
    (a) Tricuspid Atresia (rare type). From Dr. Clark, Ancon Hospital, Panama.
    (b) Septal Defects (Two Cases). From Dr. Keith Gordon, Boston, Mass.
    (c) Four Pulmonary Cusps and Minor Anomalies in Origin of Great Trunks. From Dr. L. J. Rhea, Montreal, Canada.
    (d) Double Heart from Dicephalic Lamb. From Montreal Abattoir. Presented by M. E. Abbott and M. Scherzer, Montreal. (By invitation.)
26. Anatomical Evidences of the "Left to Right Shunt" (Lundsgaard) of the Circulation in Compensated Septal Defects. Maude E. Abbott, Montreal, Canada.
27. Exhibits from the:
    (a) Pathological Department of the Boston City Hospital.
    (b) Pathological Department of the Boston University Medical School.
    (c) Pathological Museum of McGill University.

OFFICERS OF AMERICAN AND CANADIAN SECTION.

President: F. B. Mallory, Boston, Mass.; first vice-president, H. T. Karsner, Cleveland, Ohio; second vice-president, H. Marshall, University, Pa.; third vice-president, R. A. Lambert, New Haven, Conn.

Councillors: A. S. Warthin, Ann Arbor, Mich.; James Ewing, New York, N. Y.; W. T. Coplin, Philadelphia, Pa.; W. G. MacCallum, Baltimore, Md.; William Boyd, Winnipeg, Man.; H. E. Robertson, Rochester, Minn.; James Coupal, Washington, D. C.; H. S. Haythorne, Pittsburgh, Pa.; Carl V. Weller, Ann Arbor, Mich.; Stuart Graves, Louisville, Ky.; G. R. Callender, Manila, P. I.; L. J. Rhea, Montreal, Quebec.

Secretary-treasurer, Maude E. Abbott, McGill University, Montreal.

Assistant secretaries, W. W. Beattie, Montreal; H. N. Segall, Boston, Mass.

THE AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS.

PROGRAM OF THE TWENTY-THIRD ANNUAL MEETING, BOSTON, MASS., MARCH 30 AND 31, 1923.

The sessions of the American Association of Pathologists and Bacteriologists will be held as follows:—Friday morning, March 30, at the Evans Memorial, Medical Department of Boston University, 80 East Concord Street; Friday afternoon, Saturday morning and afternoon at the Thorndike Memorial, Boston City Hospital, 818 Harrison Avenue.

The American and Canadian Section of the International Association of Medical Museums will meet Thursday, March 29, at the Thorndike Memorial.

The American Association for Cancer Research will meet Thursday, March 29, and Friday, March 30, at the Huntington Memorial Hospital, Huntington Avenue and Van Dyke Street.

The American Association of Immunologists

will meet Thursday, March 29, at the Evans Memorial.

The joint session of the American Association of Pathologists and Bacteriologists and the American Association of Immunologists will be held Friday morning, March 30, at the Evans Memorial.

LUNCHEONS.

Thursday, March 29, Evans Memorial as guests of the Evans Memorial.
Friday, March 30, Medical Library, Boston City Hospital as guests of the Trustees of Boston City Hospital.
Saturday, March 31, Evans Memorial as guests of the Evans Memorial.

Members of the four societies are cordially invited by the respective hosts.

ANNUAL DINNER.

This will be held Friday, March 30, at 7 o'clock p.m., at the Algonquin Club, 217 Commonwealth Avenue. Members and guests of the Association of Pathologists and Bacteriologists, for Cancer Research and Museums Association are cordially invited. Women are admitted to the Club.

The address of the Secretary of the American Association of Pathologists and Bacteriologists, beginning March 28, will be at The Harvard Club of Boston, 374 Commonwealth Avenue.

FRIDAY MORNING, MARCH 30.

The joint meeting of the American Association of Pathologists and Bacteriologists and the American Association of Immunologists will be held in the Evans Memorial, Medical Department of Boston University, 80 East Concord Street, at 9:30 o'clock.

1. Comparison of Wassermann and Precipitin Reactions in Various Stages of Syphilis. (15 minutes.) By M. A. Wilson, and (by invitation) Rose M. Nedley, New York City.
2. The Wassermann Reaction in Leprosy, with Special Reference to the New Complement-Fixation Test. (15 minutes.) By John A. Kolmer, and (by invitation) Oswald E. Denney, Philadelphia.
3. Serological Factors of Natural Resistance in Animals on a Deficient Diet. (15 minutes.) By George H. Smith, and (by invitation) Isabel M. Wason, New Haven, Conn.
4. Further Studies in Local Streptococcus Immunity and Local Immunization. (15 minutes.) By Frederick P. Gay, and (by invitation) L. F. Morrison, Berkeley, Cal.
5. On the Mechanism of Botulinus Intoxication. (15 minutes.) Lantern slides. By J. Bronfenbrenner, and (by invitation) H. Weiss, Boston.
6. Serum Therapy of Botulinus Poisoning. 15 minutes.) By J. Bronfenbrenner, and (by invitation) H. Weiss, Boston.
7. Thermostable Antigens. (15 minutes.) By H. Gideon Wells, and (by invitation) Julian H. Lewis, Chicago.
8. The Loss in Strength of Several Lots of Diphtheria Toxin in Twenty Years. (10 minutes.) By John F. Anderson, New Brunswick, N. J.
9. The Cultivation of the Viruses of Rocky Mountain Spotted Fever and Typhus in Tissue Cultures. (15 minutes.) By S. B. Wolbach, M. J. Schlesinger, and (by invitation) Henry Pinkerton, Boston.

FRIDAY AFTERNOON, MARCH 30.

The meeting will be held in the Thorndike Memorial, Boston City Hospital, 818 Harrison Avenue at 2.30 o'clock.

1. Report of the Council. Election of Officers.
2. Syphilis of the Uterus; Demonstration of the Organism in the Lesion. (15 minutes.) Lantern slides. By O. T. Schultz, and (by invitation) Bernard Portis, Chicago.
3. Diphtheritic Vaginitis in Children with the Report of a Case. (10 minutes.) By Anna I. van Saun (by invitation), New Haven, Conn.
4. Bacteriologic Study of Vulvovaginitis of Children. (15 minutes.) By O. T. Schultz, and (by invitation) Ruth A. Anderson and Irving F. Stein, Chicago.
5. I. Observations on the Relation of Bacterial Giant Coccoids to Zygospore Formation. (10 minutes.) Lantern slides. By Ralph R. Mellon, Rochester, N. Y.
6. II. Observations on the Relation of Bacterial Giant Coccoids to Zygospore Formation. (10 minutes.) Lantern slides. By Ralph R. Mellon, Rochester, N. Y.
7. Spores of B. Anthracis in the Feces of Guinea Pigs Fed with Anthrax Material. (10 minutes.) By W. L. Holman, and (by invitation) C. A. Fernish, Stanford University.
8. Micro-organisms Resembling B. Pneumosintes from the Mouths of Man and Animals. (10 minutes.) By W. L. Holman and (by invitation) J. H. Krock, Stanford University.
9. Alterations in Virulence and Agglutination Reactions of Pneumococcus Induced by Growth in Immune Serum. (10 minutes.) Lantern slides. By Francis G. Blake, and (by invitation) James D. Trask, Jr., New Haven, Conn.
10. The Drawing of Vibrio Percolans through Berkefeld V Filters by Electrical Endosmosis. (15 minutes.) By Stuart Mudd (by invitation), Boston.
11. The Migration of Bacteria. (15 minutes.)

By Shields Warren and Stuart Mudd (by invitation), Boston.

12. Studies on Riekettsia-like Micro-organisms in Insects. (15 minutes.) By S. B. Wolbach, and (by invitation) Marshall Hertig, Boston.

SATURDAY MORNING, MARCH 31.

The meeting will be held in the Thorndike Memorial, Boston City Hospital, 818 Harrison Avenue, at 9.30 o'clock.

1. Further Studies in Autotransplantation of Endometrial Tissue in the Rabbit. (15 minutes.) Lantern slides. By Victor C. Jacobsen, Albany, N. Y.
2. Failure of Healing of the Bronchial Stump in Experimental Pneumectomy. (10 minutes.) Lantern slides. By O. T. Schultz, and (by invitation) R. B. Bettman, Chicago.
3. Physiologic Inactivity of the Muscle of the Chronic Bleeding Uterus. (10 minutes.) Lantern slides. By O. T. Schultz, and (by invitation) G. H. Miller, Chicago.
4. Changes in the Liver from Obstruction of the Bile Ducts. (15 minutes.)) Lantern slides. By J. S. McCartney, Jr. (by invitation), Minneapolis.
5. A Differential Stain for Fibrillary Neuroglia. (15 minutes.) Lantern slides. By Percival Bailey (by invitation), Boston.
6. Hemochromatosis. (20 minutes.) Lantern slides. By F. B. Mallory, Boston.
7. Adrenal Lipoids in Pathological Conditions. (15 minutes.) Lantern slides. By W. J. Merle Scott (by invitation), Boston.
8. A Pathologic Study of the Contents of the Crypts of the Enlarged Tonsil." (15 minutes.) Lantern slides. By Aldred Scott Warthin, Ann Arbor, Mich.
9. The Incidence and Etiology of Tonsillar Calculi. (15 minutes.) Lantern slides. By Carl V. Weller, Ann Arbor, Mich.
10. Arsenical Compounds in the Treatment of Blackhead in Turkeys. (10 minutes.) By E. E. Tyzzer, Boston.
11. Differential Study of Pulmonary Stenosis and Atresia (a) of Inflammatory Origin with Ventricular Septum Closed and (b) Due to Arrest of Development (with Associated Ventricular Septal Defect) illustrated by three cases; and death from Paradoxical Cerebral Embolism. (15 minutes.) Lantern slides. By Maude E. Abbott and (by invitation) D. S. Lewis and W. W. Beattie, Montreal.

SATURDAY AFTERNOON, MARCH 31.

The meeting will be held in the Thorndike Memorial, Boston City Hospital, 818 Harrison Avenue, at 2.30 o'clock.

1. Analysis of 220 Cases of Endocarditis. (15 minutes.) Lantern slides. By B. J. Clawson (by invitation), Minneapolis.
2. Renal Changes in Essential Hypertension. (15 minutes.) Lantern slides. By E. T. Bell, Minneapolis.
3. Primary "Endotheliomata" of the Large Serous Cavities. (15 minutes.) Lantern slides. By H. E. Robertson, Rochester, Minn.
4. Paper Model of Carcinoma of Skin Reconstructed from Serial Sections. (10 minutes.) By Margaret Warwick, St. Paul.
5. Malignant Melanoma in the Negro. (10 minutes.) Lantern slides. By William M. Mallia (by invitation), Lyle A. Sutton (by invitation), and Victor C. Jacobson, Albany, N. Y.
6. The Histology of Tumors of the Cerebrum and Cerebellum. (15 minutes.) By S. B. Wolbach and (by invitation) Percival Bailey, Boston.
7. Metastases in Giant Cell Tumors of Bone. (15 minutes.) Lantern slides. By James Ewing, New York City.
8. Transplantation of a Malignant Tumor of the Rabbit. (10 minutes.) Lantern slides. By Louise Pearce and (by invitation) C. M. Van Allen, New York City.
9. A Study of Metastases from a Transplanted Tumor of the Rabbit. (10 minutes.) Lantern slides. By C. M. Van Allen (by invitation) and Louise Pearce, New York City.
10. The Action of Buried Tubes of Radium Emanation on Normal and Neoplastic Tissues. (15 minutes.) Lantern slides. By Isaac Levin and (by invitation) M. Levine, New York City.

READ BY TITLE.

1. The Pathogenesis of Experimental Pneumonia in the Rabbit. By H. H. Permar, Pittsburgh.
2. The Mononuclear Phagocytes in Experimental Pneumonia. By H. H. Permar, Pittsburgh.

Officers of the Association: Paul A. Lewis, President; James Ewing, Vice President; F. B. Mallory, Treasurer; Howard T. Karsner, Secretary.

The Council consists of the President, Vice President, Treasurer, Secretary, and A. B. Wadsworth, H. Gideon Wells, Harry T. Marshall, H. E. Robertson.

Incoming Member: Hans Zinsser.

Local arrangements for this meeting were made by a committee composed of F. B. Mallory, Chairman; Benjamin White, Channing Simmons, W. H. Watters, William H. Robey.

All persons interested are cordially invited to attend these meetings.

Book Reviews.

Enlargement of the Prostate: Its History, Anatomy, etc. By JOHN B. DEAVER, M.D., LL.D., Sc.D., F.A.C.S. Assisted by LEON HERMAN, B.S., M.D. Second edition. Pp. 358, 142 illustrations. Philadelphia: P. Blakiston's Son & Co., Philadelphia. Price, $7.00.

This modernized edition of Deaver's "Enlargement of the Prostate" is both delightful and instructive. There is an excellent historical review of the various methods employed to circumvent the obstructing gland. The anatomical discussion of the prostate and its relations to neighboring structures is clear and complete. The operative attack is discussed with great breadth of understanding. Deaver prefers the suprapubic route in all cases except those in which the gland is small and fibrous, but that does not prevent him from going most thoroughly into the technic of the perineal approach. The management of the malignant prostate is not taken up.

To our way of thinking, not enough stress is laid upon the value of hypodermoclysis in the treatment of toxemia due to urinary obstruction. There are numerous typographical errors, which is too bad in a book otherwise so well gotten up. Beyond these rather trifling criticisms we have nothing but praise for the book. It is as complete as a medical book can be expected to be.

Rickets. By J. LAWSON DICK, M.D., Ed., F.R.C.S., Eng., Deputy Commissioner of Medical Services, London Region, Ministry of Pensions; author of "Defective Housing and the Growth of Children." New York: E. B. Treat & Co. Price, $5.50.

This book of 481 pages gives a very complete review of the subject of "Rickets," including the more recent advances in this subject. The geographical distribution is very comprehensively discussed and the author concludes that rickets is a disease that occurs primarily in latitudes of 40° to 60°, north. He calls attention to one exception, namely, to the occurrence of rickets in Australia.

The following chapters of Part I deal principally with the symptomatology and pathology of the disease. The author does not show as intimate a knowledge of this portion of the subject.

In Part II the natural history of rickets, together with the etiology and treatment, is discussed. The author leaves the impression that rickets is due more to poor hygiene than to defective diet. He considers that vitiated air and lack of sunlight are the most important factors in the causation of the disease.

The book is to be highly recommended. It is written from the point of view of public health with special emphasis upon the economic effects of the disease.

Feeding, Diet and the General Care of Children. A Book for Mothers and Trained Nurses, by ALBERT J. BELL, A.B., M.D., Assistant Professor of Pediatrics in the Medical Department of the University of Cincinnati; attending Pediatrician to the Cincinnati General Hospital, The Tuberculosis Hospital and the Christ Hospital; member of the Medical Milk Commission, and Chairman of the Divisional Council on Child Hygiene, Cincinnati, etc. Illustrated. F. A. Davis Company, Publishers, Philadelphia, 1923.

A small volume of 276 pages such as this one, and on this subject, requires no very special mention, dealing as it does with the same theme with minor variations as do most of these books for mothers. It is a quite practical book, bringing up to date some of the theories of diet and infant feeding, but there is otherwise nothing new or unusual contained in its pages. Many diet lists are included which are, of course, useful to the mother or nurse, and some space is devoted to emergency therapeutics such as a table of antidotes, artificial respiration, treatment of dog bites, snake bites, blank cartridge wounds, etc. Some of this is useful, other of it might serve only to increase apprehension by intimating dangers which might not exist and treatments which could not be administered except by the physician.

Also, it seems to me, too much space is devoted to the diagnosis and treatment of serious diseases, if this is a book designed for the hands of mothers. The diagnosis, symptomatology and treatment of cerebrospinal meningitis, diphtheria, and typhoid had better be left to the physician.

Most books which are written on the care of infants seem intended for mothers living in specially constructed houses and either employing maids or nurses to care for their babies, or able to take entire charge themselves and do nothing else. It is my belief that the majority of intelligent and educated young mothers are living in apartments or very small houses and doing their own housework as well as taking care of the baby. How they are to get four or five hours' exercise in the open air each day, as well as feeding and bathing the baby, making the beds, getting the meals and washing the diapers, may prove an insoluble problem to some of them.

This is, however, a perfectly sensible and practical little volume, not in any way extraordinary, quite worthy of being the *vade mecum* of many households.

Cancer of the Breast and Its Treatment. By W. Sampson Handley, M.S., M.D., London; F.R.C.S., Eng.; Hunterian Professor of Surgery and Pathology in the Royal College of Surgeons of England; Surgeon to the Middlesex Hospital and to Its Cancer Charity, and Lecturer in Its Medical School. Second edition. New York: Paul B. Hoeber. 1922.

The first edition of Dr. Handley's book appeared in 1906, and was presumably reviewed in these columns, though the text of the critic is not at present available. Sixteen years later and more than six years after the exhaustion of the first, this second edition is published. It includes new chapters on Radiological Treatment, Recurrence and Its Operative Treatment, Paget's Disease, Lymphangioplasty, and Injury as a Causative Factor in Carcinoma. The chapter on Natural Processes of Repair in Carcinoma has been rewritten.

The present book consists of 400 pages, half of which concerns what might be called the Natural History of Cancer as Handley sees it, and to which he has contributed fundamentally new ideas; and the second half, which has to do with anatomy, operation and treatment in general.

Handley's conception of the method of growth and metastasis in cancer is completely at variance with previous theories; it is based upon years of careful, painstaking personal work and observation, and innumerable microscopic examinations, together with a careful consideration of current literature. That his views are not universally accepted and followed seems to the reviewer more likely to be due to ignorance of them than to lack of conviction after careful study.

Mr. Handley in his preface states his conclusions concisely and in very carefully chosen words. We therefore quote freely:

"The following pages represent an attempt to place the operative treatment of breast cancer, hitherto in some respects still empirical, upon a more complete rational basis. They embody the results of an investigation carried out in the Cancer Research Laboratories of the Middlesex Hospital during my tenure of the 'Richard Hollins' Cancer Research Scholarship, 1903-06, and partially summarized in my Hunterian Lectures for 1905. The account of parietal dissemination is based upon two papers contributed to the Archives of the Middlesex Hospital, which are here reprinted, with additions, by kind permission of the Cancer Investigation Committee of the Middlesex Hospital. The description of visceral dissemination is largely taken from my 'Astley-Cooper' Prize Essay (1904), on 'Epigastric Invasion of the Abdomen in Breast Cancer.'

"I have regarded questions of etiology, pathogenesis, and diagnosis as beyond the scope of this work, the aim of which is to present for the surgeon's use a careful picture of a breast cancer, of its microscopic ramifications, and of its mode of dissemination, and upon this basis to discuss the methods of operative treatment.

"The method of operation advocated in these pages has a pathological basis throughout, and is not a mere variation of technique. My aim, however, has not been the impossible one of devising a 'new' operation for breast cancer, but rather to decide by an appeal to pathology, the conflicting claims of existing methods and to embody selectively with such modifications as seemed necessary the best features of each.

"My egotism may be condoned if I recapitulate as briefly as possible the results of my own work on dissemination, which has shown:

"(*a*) That carcinoma spreads centrifugally in all directions from its point of origin by permeation of the lymphatic plexuses. This conclusion is proved for breast cancer and partially demonstrated for malignant melanotic growths, and for gastric and uterine carcinoma. Should it prove to be true for all the carcinomata, the surgery of malignant disease is for the first time placed upon a rational basis, and a criterion is provided by which variations in surgical technique can be judged.

"(*b*) That curative and reparative processes inadequate for cure are a normal part of the cancer process. This conclusion places the therapeutic problems of cancer in a new and hopeful light.

"(*c*) That the processes of inflammation and fibrous tissue formation are the principal agents in the defense of the body against carcinoma, but they do not come into play until the cancer cell exerts pressure upon its surroundings, or by its degeneration sets up chemical irritation.

"(*d*) That invasion of the serous cavities by cancer cells is an event of critical importance in the process of dissemination.

"(*e*) That the embolic theory of dissemination is only true for exceptional cases."

It is sincerely to be regretted that circumstances have interrupted intended investigations upon the stomach and the rectum. These studies would have completed the work as a whole, and if Mr. Handley should demonstrate in the future that permeation obtained in intestinal and gastric cancer, as he has shown it to obtain in the breast, his contribution to the knowledge and the treatment of this great subject would indeed be enormous.

We confidently hope that this may obtain, and we recommend, without reservation, this most admirable book to all earnest students and practitioners.

Current Literature Department.

ABSTRACTORS.

GERARDO M. BALBONI
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A Clinical Study of Cancer of the Uterine Cervix: Summary of the Results Obtained by Various Methods of Treatment.

Ross, J. W. (*Canad. M. A. J.*, Vol. xii., No. 11, November, 1922) made a study of 475 cases seen in the Mayo Clinic between Jan. 1, 1913, and Jan. 1, 1919. The latter date was chosen so that at least three years should have passed since the patients were first seen at the clinic. He gives seven tables, grouping the cases in various ways, which show that in very early cases of cancer of the cervix, treatment by surgery alone gives good results. Surgery in combination with radium gives slightly better results than surgery alone. In operable but not early cases treatment by surgery alone or combined with radium gives the best results. Radium alone or Percy cautery alone are of equal value and both less efficient. If radium is not available, the Percy cautery should be used. In cases considered inoperable because of extension to the vagina, surgery gives the best results and radium is disappointing. In inoperable cases radium, alone or in combination with cautery or surgery, is the only effective agent. In advanced cases radium is superior to all other methods, but not curative. The incidence of fistula is higher with Percy cautery than with any other method.

Asthma in Children.

Brown, Alan (*Canad. M. A. J.*, Vol. xii, No. 11, November, 1922) divides the cases into: 1, those in which the beginning resembles acute bronchitis, seen in young infants, with sudden onset, slight fever, incessant cough, dyspnoea, sometimes cyanosis, with râles, and very abruptly subsiding, unlike bronchitis; the diagnosis hardly to be made except on recurrences. Catarrhal asthma, or those following in the course of bronchitis. True asthma. Hay asthma.

Cutaneous tests may be of great aid in determining the underlying cause of some cases. If due to pollens, desensitization may relieve, but is dangerous if not most carefully done. If due to animal emanations, hair, feathers, etc., either desensitization should be tried or exclusion of the offending substance. If food is the cause, exclusion may be carried out, or that may be difficult in some cases, especially of eggs and grains, on account of their very extensive use in cooking; immunization may be carried out by Schloss' method of increasing powdered egg white slowly from one milligram. Idiosyncrasy to meat juice usually cures itself in months if the meat is omitted. If one grain is harmful, others are likely to be, and too great limitation tends toward a carbohydrate starvation. If milk offends, buttermilk or boiled milk may succeed well. Sometimes drop doses with gradual increase may build up an immunity. **[A. W. C.]**

Merits of Intraperitoneal Injections in Infants.

McGregor, T. D. (*Canad. M. A. J.*, Vol. xii, No. 11, November, 1922) finds that fluid given intraperitoneally is rapidly absorbed, safely and conveniently given; he uses the following technic: For injection, a syringe or funnel and rubber tubing may be employed, the former being easier to manipulate. As a precautionary measure the urinary bladder should be palpated. The midline below the umbilicus is the customary point of entry, but any part of the abdominal surface may be chosen provided there is no solid viscus underlying. A needle with a moderately blunt tip may be employed, although it has been proven that it is practically impossible to perforate the bowel by the sudden insertion of a needle. The use of too large a needle is often followed by a troublesome oozing at the point of entry. As a rule, from four to eight drams per pound of body weight may be injected into babies under one year. If distention be marked, a smaller amount may have to be employed, and extreme distention contraindicates any introduction of fluid. It is never advisable to inject more than 10 ounces at one time. During injection the respiration and circulation should be carefully watched and the introduction of more fluid stopped if any embarrassment occurs. After the injection there may be cyanosis and other symptoms of undue pressure, if too great an amount of fluid has been introduced. This can usually be removed quite readily by reinserting the needle and withdrawing a sufficient amount of fluid to lessen the pressure. Injections may be repeated twice daily. Absorption is usually complete in 24 hours. There may be a slight rise in temperature, indicating a chemical peritonitis.

[A. W. C.]

Septic Absorption in Diffuse Septic Peritonitis.

Costain, W. A. (*Canad. M. A. J.*, Vol. xii, No. 11, November, 1922) carried out a series of experiments on dogs at the University of Toronto in an attempt to solve the problem of the channel of absorption from the peritoneum. Seven dogs recovered after the production of a fatal peritonitis by successfully causing a thoracic duct fistula and thus preventing the lymph from entering the blood. A collateral circulation re-established the lymph flow after a time. They recovered, in spite of the fact that the cause was not removed, and no resort was made to abdominal drainage. The infection in the peritoneal cavity had no outlet, save through the duct, and when this outlet was available the result was recovery. If a fatal septic absorption could occur directly into the blood through the subperitoneal capillaries, or through the diaphragmatic lymphatics and thence through the right lymphatic duct into the blood, these dogs which recovered would have died, for nothing was done to prevent such absorption. The practical application of these findings has yet to be worked out. It would seem that the first procedure, after a diagnosis of diffuse septic peritonitis has been made, would be to establish a thoracic duct fistula, and at a later date whatever operative measures the situation warranted. The operation could be done with greater facility in the human than in the dog, as the duct is more accessible and, being larger could be more successfully drained. The emaciation could be combated by blood infusions or transfusions. By checking the septic absorption, those distressing complications which are met with so frequently in peritonitis could be largely overcome. The conclusion to be drawn from this experimentation is that in diffuse septic peritonitis, death travels through the thoracic duct.

[A. W. C.]

Local Anaesthesia as Applied to Operations on the Rectum and Anus.

Grant, A. J. (*Canad. M. A. J.*, Vol. xiii, No. 11, November, 1922) gives in detail his method of obtaining complete insensitiveness to pain for operations at that region, frequently operating in the office and sending the patients home by motor to remain quiet until the bowels are allowed to move, there being thus numerous advantages over the same operations under a general anaesthetic. His technic is: take a ½% anocain combined with 1-100,000 epinephrin solution. Select points 1, 2, 3 and 4, each three-quarters inch distant from the margin of the anus and forming the corners of a square. Commencing at point 1, with a 25 gauge needle, make a wheal by intracutaneous injection of the skin. Pass the needle toward point 2 in the subcutaneous tissue, always keeping a flow of solution, distending the tissues ahead of the needle. Before withdrawing the needle, make another wheal at point 2 by injecting into the skin from within outwards. A similar wheal is made at 3, while the injection at point 4 may be made from the original injection. Thus the only inconvenience to the patient has been the initial prick, and this is reduced to a minimum by the method described. The next step is the deep injection, using a 2½-inch 23 gauge needle and commenced by inserting the left forefinger until the tip is just beyond the internal sphincter. In many irritative conditions of the anus the introduction of the finger is quite painful. This may be alleviated by placing a pledget of cotton soaked in 10% cocain solution just within the folds of the external sphincter and allowing it to remain while the superficial injection is being carried out. Four punctures are made in the now fully anaesthetized skin, at points 1, 2, 3, and 4, aiming at the tip of the finger, which has already been introduced beyond the internal sphincter. Solution is expelled ahead of the needle as before, until the point is felt immediately next to the finger in the bowel and separated from it only by the mucous membrane. About 10 cc. of solution is usually sufficient for each one of these deep injections. A wait of five minutes should now be the rule in order to give the anaesthetic time to do its work. [A. W. C.]

Infantile Eczema and Examination of the Stools.

White, C. J. (*Arch. Derm. and Syph.*, Vol. vii, No. 1, January, 1923) recommends strongly careful stool examinations in resistant cases of infantile eczema as well as the use of carefully prepared black—not olive green—crude coal tar paste, made up of crude coal tar and zinc oxide two parts, rubbed up together, then corn starch and petrolatum each sixteen parts rubbed in. He gives over 20 case histories showing excellent results.

[A. W. C.]

Treatment of Arsphenamin Dermatitis and Certain Other Metallic Poisoning.

Mcbride, W. L. and Dennie, C. C. (*Arch. Derm. and Syph.*, Vol. vii, No. 1, January, 1923) have experimented with calcium sulphid, calcium sulphite, and sodium thiosulphite in cases of poisoning by arsenic and mercury and suggest its use also in cases of poisoning by bismuth, zinc, and copper, on account of the well-known property of sulphur of precipitating many metals. They find the thiosulphate the safest, and nontoxic up to two grams if pure and sterile. They obtained some of the drug in similar doses to arsphenamin and gave it as follows: The first day, 0.3 gm., the second day, 0.45 gm., the third day, 0.6 gm., the fourth day, 0.9 gm., the sixth day, 1.2 gm., the eighth day, 1.8 gm. The duration of the poisoning was greatly reduced. They report seven cases. [A. W. C.]

A Brief for the More Accurate Classification of Skin Diseases.

Lane, C. G. (*Arch. Derm. and Syph.*, Vol. vii, No. 1, January, 1923) in a paper read last June at the A. M. A. meeting in St. Louis, suggested that a special term be applied to the group of cases presenting skin lesions associated or caused by various industrial processes instead of the various indefinite terms now commonly used, making the cataloging and looking up of cases so difficult. The suggestion was very favorably received. In this paper Lane discusses the various names now in use with their several disadvantages and advocates the excellent term, "dermatosis industrialis," to be qualified by the type of eruption and, when known, by the causative agent. [A. W. C.]

Leucoplakia of the Renal Pelvis.

Cumming, R. E. (*Surg., Gyn. and Obstet.*, February, 1923) writes as follows:

Leucoplakia of the renal pelvis is a rare condition; the bladder is more frequently involved, and in the bladder one can readily recognize leucoplakia by cystoscopy.

The histopathological picture is that of a replacement of the normal transitional epithelium by a many-layered coating of stratified squamous epithelium showing on the surface varying degrees of keratinization. In the case herewith presented, the pelvis was stuffed with dry keratin flakes.

Etiological possibilities are vague, and must be based on histogenetic laws and clinical coincident disease. Stone, infection, or carcinoma, occur with leucoplakia in many but not all cases.

While syphilis and alcoholism have a definite relation to leucoplakia elsewhere, neither seems to bear upon the affection in the renal pelvis. Inflammation of the renal or urinary mucosa probably accompanies all metaplasia, but cannot definitely be ascribed as producing it.

The symptoms are those of related conditions, except for the painless passage of epithelial membrane. Symptoms of stone, tuberculosis, and tumor are most mentioned.

Operative treatment of advanced cases is certainly advisable, nephrectomy being most often indicated.

More diligent study of specimens obtained at operation and autopsy may bring to light a greater number of instances of leucoplakia, although this seems doubtful in view of the definite picture presented by operated cases. [E. H. R.]

Intestinal Resection in Massive Umbilical Hernia.

Foss, H. L. (*Surg., Gyn. and Obstet.*, February, 1923) reports in detail a case of massive ventral hernia in which all of the omentum, and many loops of small intestine were densely adherent to each other and to the sac, and which were impossible to reduce. Therefore, the author resected the omentum, caecum, ascending and transverse colons with 7 feet of the ileum, and secured a splendid result.

Following the success of this case, he has operated seven or eight other cases in the same manner, with equally satisfactory results.

This method would seem in the hands of skillful surgeons to be often the solution of one of these extremely difficult problems, and probably some of the cases hitherto refused operation could be adequately cared for in this manner. [E. H. R.]

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DARWIN AND PASTEUR.

SCIENCE has recently published an incompleted essay by the late William Thompson Sedgwick, of the Massachusetts Institute of Technology. Following the method of Plutarch's "Parallel Lives," this is, as its title informs us, an essay in comparative biography.

Of the two, Professor Sedgwick writes, Charles Robert Darwin wrought upon the mind of his time a complete change in the point of view concerning the origin, the nature and the relationships of mankind and often living things. Louis Pasteur disclosed to the astonished gaze of the nineteenth century a new world of microscopic life dwelling upon us, within us, and about us, working sometimes for good and sometimes for evil. Darwin was a silent Savonarola, Pasteur a sedentary Columbus of Biology. Such masters invite study and comparison.

The way having been paved by the geologists, Darwin convinced his contemporaries that the various kinds of plants and animals have come into being gradually and naturally by the process of evolution rather than by any supernatural power. Meanwhile, interested in the origins of plague, pestilence, and sudden death, Pasteur was solving the problems of fermentation, putrefaction and decay, which led him straight to the mysteries of contagious and infectious diseases.

"Darwin and Pasteur were for sixty years contemporaries, but Pasteur was the younger by thirteen years. Darwin was born in February, 1809, Pasteur in December, 1822. Born thirteen years apart, they died thirteen years apart, both at the age of seventy-four years."

"Both had good parents and good homes, but Darwin's parents were gentlefolk, while Pasteur's were hardworking tradespeople. Darwin's father was a well-to-do practising physician, Pasteur's an impecunious tanner. Darwin's grandfather, Erasmus Darwin, had a strong taste for science, coupled with an imagination which led him to write verses entitled, 'The Botanic Garden.' Pasteur's father was a veteran of the Napoleonic wars, proud of his loyal service. His grandfather was an unsuccessful tanner. Darwin's mother was Susannah Wedgwood, daughter of Josiah Wedgwood, the successful and famous manufacturer of pottery. Pasteur's mother was Jeanne Roqui, the daughter of a gardener."

"For both the non-effect of environment.

"For both industry, concentration, struggle.

"For both natural law in place of mystery.

"For Pasteur, minutiæ, laboratory, precision.

"For Darwin, broad principles, masses of evidence, field work, less laboratory.

"For Pasteur, 'the infinitely little.'

"For Darwin, the continuing development of mankind."

"Darwin, the master of the organic world, sleeps near Newton, the master of the inorganic, in the great Abbey, among the most famous of his race. Pasteur rests alone in the chapel of his laboratory. The world claimed Darwin's body to place among its great ones. Science kept Pasteur's for its own. Both dwell forever among the immortals. The last half of the nineteenth century may well be called their age—the Age of Darwin and Pasteur."

REPORT OF THE COMMITTEE ON PUBLIC HEALTH, SUBMITTED AT A MEETING OF THE SUFFOLK DISTRICT MEDICAL SOCIETY, MARCH 14, 1923.

A temporary committee on health was appointed in 1922 by Dr. Lund, then chairman of the Suffolk District Medical Society, to consider whether or not the Society should play a more active part in public health matters. The temporary committee was composed of George C. Shattuck, chairman; Channing Frothingham and Richard H. Miller. Their report was presented to the Society at its regular meeting on January 24, 1922. In accordance with one of the recommendations the Society voted that the Chair appoint a small committee on public

health with power to represent the Society in health matters and to become part of a medical advisory committee for the prospective new health commissioner in case such an advisory committee should be formed.

The Chair subsequently appointed Drs. George C. Shattuck, Robert B. Osgood, and Martin English as the Committee on Public Health of the Society. Similar action had been taken previously by the Norfolk District Medical Society, which appointed Drs. Timothy J. Leary, Francis P. Denny and Harry Linenthal.

Subsequently, the Boston District of the Massachusetts Homeopathic Medical Society appointed Drs. William H. Watters, Wesley T. Lee and Henry M. Pollock to represent it in like manner.

The three above named committees met together on April 17, at the Boston Medical Library, by invitation of the chairman of the Suffolk District Medical Society Committee, and elected him as chairman of the group. The events which led up to the appointment of the health committees were discussed and also the possibilities of future usefulness.

The Schick test and toxin-antitoxin immunization were discussed as subjects then being brought to the fore by Dr. Mahoney, the new Health Commissioner. Drs. Denny and English were appointed a committee to study the question of its value. They reported favorably at a subsequent meeting, following which report the group was unanimous in feeling that it could support the policy of the Commissioner in this matter.

At a meeting of the same group on July 24, Mr. Morrison, of the Boston Health League, was present, by invitation, and described the work of the Municipal Health Unit on Blossom Street, and the activities of the Boston Health League, in East Boston, where another health unit was being organized by private initiative.

These meetings of the Health Committees served to bring the members together informally and to give opportunity for discussion and study of subjects already included in the health program of the city.

The members of the three representative health committees received notice individually from the Mayor of their appointment to the Medical Advisory Board of the Commissioner of Health early in May, 1922. It is believed that never before has a Mayor of Boston appointed for the Health Commissioner an advisory board consisting of authorized representatives of medical societies.

The first meeting of this Board was May 7, 1922, in the office of the Commissioner and under his chairmanship; with Mr. Stephen Maloney, Secretary of the Department, acting as Secretary. It is recorded in the minutes that after opening the meeting, Dr. Mahoney stated that "the Board was officially appointed by His Honor James M. Curley, to advise and cooperate with the Health Commissioner upon request, and in cases of emergency, in all medical matters, particularly those pertaining to preventive medicine." Dr. Mahoney then "requested that the members of the Board bring before their respective societies the desire that all physicians co-operate with the Health Department in the prevention of disease."

The Epidemiologist, Dr. John A. Ceconi, who had undertaken the Schick work, then gave a résumé of what had been done thus far.

The Board discussed the advisability of endorsing the policy of the Health Department in regard to the Schick test and the toxin-antitoxin method of immunization for control of diphtheria. The Board favored this measure unanimously. After further consideration of ways of promoting the success of the work, the meeting adjourned.

Several members of the Board subsequently got in touch with the heads of several of the large clinics for children in the city and asked that they co-operate with the Health Department so far as possible in promoting the Schick work. All those approached expressed entire willingness to co-operate so far as practicable.

The Health Department, as had been proposed by the Board, published subsequently, in its Bulletin, a list of clinics to which children might be taken for testing or immunization.

Members of the Board were instrumental in organizing special meetings of the Norfolk and of the Suffolk District Medical Societies at which the Schick test and toxin-antitoxin immunization was the subject of the evening. These meetings were well attended and were considered eminently successful. The Homeopathic Society had held a similar meeting previously.

A considerable amount of study has been devoted to the subject of health centres in Boston by several members of the Board, including Suffolk District representatives. The subject is considered very important from a health standpoint, because it is the desire of the Mayor to establish four new health centres which are to be built and maintained by the city. Including the Centre on Blossom Street, there would then be five such Health Centres in Boston under municipal management. The ideas of the Board are crystallizing gradually and it expects before long to be able to make a statement of its views regarding the kind of work that can appropriately be conducted in these Health Centres. The subject is many sided and presents considerable difficulties, but it is essential that a clear-cut policy should be followed in the development of these Centres.

Other subjects considered by the Board have been rat-proofing of new buildings, and standardization of the reporting of still-born infants.

Meetings of the Advisory Board have not been frequent to date, but a series of meetings at weekly intervals has now been planned in order

that the Board may have the opportunity to discuss in turn the problems of all the Divisions of the Department.

RECOMMENDATIONS OF COMMITTEE.

(1) The Committee wishes to emphasize the fact that the Society has been honored by the appointment of its representatives as members of the Advisory Board of the Health Commissioner and, further, that by accepting such appointment, these representatives have assumed for the Society increased obligation to work for the betterment of health in Boston.

(2) The Committee recommends that the work which it has begun as representatives of the Society should be continued officially by representatives of the Society.

Signed:

GEORGE C. SHATTUCK, *Chairman.*
ROBERT B. OSGOOD,
MARTIN J. ENGLISH.

This report was accepted and it was voted that this committee be continued.

This comparatively brief report presents to the medical profession a very definite obligation to engage in active co-operation with the Medical Advisory Board. These gentlemen have assumed responsibilities which are unique in the history of Boston and their activities will be of value largely in proportion to the support given by physicians.

With the exception of a comparatively few public spirited men the profession as a class takes very little active interest in public health problems. It is customary to leave the arduous duty of maintaining high standards of public health efficiency almost entirely to the officials directly responsible. These officials often feel keenly the lack of support. Now that we have this Board composed of representative men, every practitioner should show appreciation of the sacrifice of time and comfort involved in the work which has been undertaken. The members of this Board have very definite ideals which they feel should be applied to public health functions. Hitherto, progress has been slow because it is always necessary to lay a foundation before erecting a structure. The members are showing interest in the work and are ambitious to help the authorities in promoting the best possible health conditions. Health is generally believed to be purchasable, but municipalities must be educated in order to induce them to make the necessary appropriations. Community health is an important economic problem and depends on community effort.

This Board plans to hold frequent meetings and to confer regularly with the heads of divisions of the Health Department of Boston. They are working not only to make life more secure and enjoyable, but they are working for the prosperity of the city.

Will the profession extend encouragement and definite support?

MATERNAL AND NEONATAL MORTALITY.

MATERNAL mortality in the United States is the second highest of a large number of countries, whose statistics are available, and during the last twenty-five years not only has there been no appreciable decrease in this mortality, but in many States and most cities there has been an actual increase, according to Levy in the *American Journal of Public Health*. This situation also applies to the mortality of the first month of life.

The relationship of this mortality to the percentage of births attended by midwives is interesting, and would seem to indicate that the maternal mortality is not adversely affected by the presence of the midwife. Newark, New Jersey, with the highest percentage of births attended by midwives, namely 38 per cent., has a death rate of 6.5 per 1,000 births, or 1 in 154; New York City, with 25 per cent. of its births attended by midwives, has a rate of 5.6, or 1 in 178; Baltimore, with 26 per cent., has a rate of 5.7; and Cleveland, with 25 per cent., has a rate of 6.9.

"We would contrast this with the City of Boston which, with its highly organized hospitals, medical colleges, prominent obstetricians, organized official and non-official health work, intensive prenatal work and a well educated general public, presents a maternal mortality rate of 7.7, or 1 in 130 mothers, although only 2.5 per cent. of the mothers, according to reports, were attended by midwives. This is the third highest rate among the fifteen largest cities and is exceeded only by Cincinnati by 0.2 of a point, and New Orleans by 4.2 points."

This rate of 7.7 obtains in spite of the fact that there has been a slight decrease in mortality in the preceding five years.

It appears almost general that an increase in the number of cases delivered by midwives has been attended by a decrease in the maternal mortality, and the converse holds true, as in Cleveland, showing a reduction of the cases attended by midwives from 28 per cent. in 1920 to 25 per cent. in 1921, and at the same time an increase in maternal mortality from 5.9 to 6.9. In Newark it has been noted also that even among primiparae the maternal mortality is lower among women attended by midwives than for those attended by physicians in private or hospital practice. The neonatal mortality rate follows in a general way the trend of the maternal mortality figures; thus in Newark during the past three years there has been a decrease in the percentage of cases attended by midwives from 45 to 38, while there has been an increase in the neonatal mortality rate from 31.6 in

1919 to 37.0 in 1921. The neonatal mortality in Newark in 1921 from babies delivered by midwives was 32.3, those in hospitals 34.2, physicians in private practice, 40.6.

These data are summarized as follows:

"A careful analysis of still-births, puerperal deaths and deaths under one month indicates:

1. That the mortality rates are not unfavorably influenced by the percentage of births attended by midwives.

2. That the lowest rates are frequently found in cities and counties with the highest percentage of births attended by midwives.

3. That even among primiparae the puerperal death rate is lower among women attended by midwives.

4. That the puerperal death rates by nativity of mother are lowest among those groups that have the highest percentage of births attended by midwives.

As comment we would say that the JOURNAL has never sought to cover up the need of a house-cleaning when that need has been demonstrated, and these statistics seem to show that our position is not enviable. A careful local analysis of conditions would be indicated to show where the fault lies, and wherein conditions should be improved. In regard to the employment of midwives, it must be recognized that midwives, as a rule, attend the simple and uncomplicated confinements, and where complications arise the physician is called or the hospital is resorted to, and the statistical onus then falls to their share. This does not cover up the fact that 7.7 maternal deaths per 1,000 births is a mortality rate which calls for serious consideration.

Miscellany.

MASSACHUSETTS ASSOCIATION OF ASSISTANT PHYSICIANS.

The fifty-ninth meeting of the Massachusetts Association of Assistant Physicians was held at the Psychopathic Hospital, Boston, on Wednesday, March 14, ninety-one members and ladies being the guests of the chief executive officer, Dr. W. Franklin Wood. During the morning small groups of visitors were given the opportunity of seeing the different departments of the hospital.

Luncheon, at one o'clock in the afternoon, amid appropriate seasonable decorations, reminding us of the ancient Saint of Ireland, was a very enjoyable affair. While the meeting was in progress, the ladies were entertained by the hostesses, Mrs. W. F. Wood and Mrs. E. A. Pattrell.

The President, Dr. Arthur E. Pattrell, called the meeting to order at two o'clock. The program was opened by the Director of the Psychopathic Hospital, Dr. J. Macfie Campbell, who, after welcoming the association, spoke on "Modern Trends of Psychiatry." This subject was grouped under three heads by Dr. Campbell: (1) Investigation of somatic conditions, both bacteriologic and endocrinologic; (2) Psychological investigation along psycho-analytic lines; insufficient preparation resulting in much immature work being produced in this field; (3) Clinical psychiatry places emphasis on the rôle of personality in the development of the psychosis, considering as paramount the life situation with its stresses and strains, combined with the original equipment modified by experience. Dr. Campbell considers that in this field lies the greatest opportunity for psychiatrists in the State service.

Dr. George K. Pratt, Director of the Massachusetts Mental Hygiene Society, spoke of the progress of the Mental Hygiene Movement and its particular and intimate relations with the aims of psychiatrists in general and of those in the State service in particular.

A paper on "The Spinal Fluid Sugar" was read by Dr. Benjamin J. Alpers. In this he gave a brief review of the literature of the subject, discussed the nature of the reducing substance and gave the results of his determinations in some one hundred and thirty cases. These included the normal, cerebro-spinal syphilis, tabes, general paralysis of the insane (untreated and treated cases), encephalitis and tubercular meningitis. He concludes that the findings in cerebro-spinal syphilis and tabes fall within normal limits, tubercular meningitis shows a slight rise, paresis and encephalitis a definite increase. It is interesting to note that the untreated cases of paresis show less deviation from normal than the treated.

Dr. A. H. Ehrenclou and Miss E. B. Jones, Social Service, presented a paper on "The Economic Waste Entailed by a Case of Alcoholism," in concluding the program. The patient under discussion was a moderate drinker up to the age of twenty-eight years, when he began to indulge more heavily. During the following twenty-five years he was committed forty-six times for drunkenness. During his travels he was in the Boston State Hospital and State Infirmary once each. Twice in the Plymouth Jail and the Psychopathic Hospital; in the State Farm fifteen times, and the House of Correction twenty-five times, length of stay varying from two days to twelve months. The actual cost of maintenance, not considering court procedures and arrests, has been $2432.53; interest on this sum brings the total to $4638. If the loss of this man's service be considered at two dollars a day, the grand total reaches $18,366. Dr. Ehrenclou very aptly concludes that the findings in this case would make us think that "an ounce of mental hygiene is worth a pound of State institutional care."

Dr. George M. Kline, Massachusetts Commissioner of Mental Diseases, was an interested guest.

NEIL A. DAYTON, M.D., *Secretary.*
Wrentham State School.

NEW ENGLAND DERMATOLOGICAL SOCIETY.

The following cases were shown at the February meeting of the New England Dermatological Society, held at the Massachusetts General Hospital:

1. A girl, 11 years old. Folliculitis ulerythematosa reticulata. Dr. Casselberry.
2. Woman, 61 years old. Lichen planus atrophicus. Dr. Sawyer.
3. Woman, 60 years old. Lichen planus atrophicus. Dr. Lane.
4. Young woman. Lupus erythematosus. Dr. Swartz.
5. A young man. Probable syphilitic cervical adenitis. Dr. Lloyd.
6. A boy, 15 years old. Secondary syphilis with marked adenopathy. Dr. Lloyd.
7. Woman with reddish papillomatous eruption on tongue, for diagnosis. Dr. Macdonald.
8. Four children with tinea favosa, all American born. Dr. Swartz.
9. Woman, 22 years old. ?-adenoma sebaceum. Dr. Cummins.
10. Boy, 16 years old. ?-alopecia areata. Dr. Swartz.
11. A man, 60 years old. Epithelioma of nose, showing result by radium treatment. Dr. Greenwood.
12. Man with secondary syphilis, with a marked follicular and flat papular eruption. Dr. Lloyd.
13. Man with secondary syphilis and arsphenamin dermatitis, treated with intramine. Dr. Lloyd.
14. Man with lesions on legs. ?-psoriasis or erythema multiforme. Dr. Towle.
15. Two children with lesions on face and arms. ?-scleroderma, or dermatitis actinica, or xeroderma pigmentosa. Dr. Towle.
16. Young woman. Congenital lues and psoriasis. Dr. Lloyd.
17. Young woman with late syphilitic lesions of lip. Dr. Swartz.

BOSTON MEDICAL HISTORY CLUB.

At the meeting held at the Boston Medical Library, Monday, March 19, Dr. Joseph W. Courtney read a paper on "The Multiple Personality of Dr. Gui Patin," sketching briefly Patin's early life and then giving a careful study of the man by quotation from his voluminous correspondence, on which his fame chiefly rests. His letters show him pedantic, partisan, hypocritical and unscrupulous, an unflattering picture relieved only by his love and veneration for books, especially the classics, of which he made a famous collection.

Dr. Daniel C. Elkin of the Peter Bent Brigham Hospital read a paper on "The Transylvania Medical School," founded in Lexington, Kentucky, in 1780 (two years before the Harvard Medical School) and justly famous as the source of medical education beyond the Alleghanies. He sketched the interesting lives of many of the early teachers, Brown, Dudley, Caldwell, Drake, Hill and others, and showed early cards of admission, books, pamphlets and other memorabilia.

Dr. Paul Eaton of the United States Public Health Service read two letters from Isaac Briggs, a widely known surveyor and scientist of Sandy Spring, Maryland, which show that on March 23, 1802, he received from the "Institution for the Inoculation of the Kine-Pock of New York" some vaccine which was used for the inoculation of his children and a servant. This date is especially interesting as it makes the New York Institution a contemporary, if not the predecessor of the "Vaccine Institute of Baltimore," which is called the "first vaccine institute organized" in Garrison's "History of Medicine."

Mr. James F. Ballard spoke of Leonhard Fuchs, the Bavarian botanist (1501-66) and showed a beautiful copy of his "Errata Recentiorum Medicorum," first edition, 1530, also some interesting pictures.

Dr. Harvey Cushing showed the rare first leaflets of "De Musculorum Humani Corporis" of Cananus, with illustrations, a book begun before Vesalius' great work, but so overshadowed by it that it was never completed.

The Annual Meeting will be held Monday, April 16.

ANNUAL CONGRESS ON MEDICAL EDUCATION, MEDICAL LICENSURE, PUBLIC HEALTH AND HOSPITALS, CHICAGO, MARCH 5, 6, AND 7, 1923.

The subscribers of the BOSTON MEDICAL AND SURGICAL JOURNAL, who read Dr. Painter's excellent summary of the reports relating to medical education, delivered at the annual Congress in Chicago, must be impressed by the virility and progressive qualities with which these reports abound. At a later date all the papers presented at this three-day meeting, together with their voluminous and important discussions, will appear in print. It is important to remember that these reports were made to the various standing committees of the American Medical Association, by whom they will be presented to the House of Delegates of the Asso-

ciation at the San Francisco meeting, June 25-29, 1923. If accepted and adopted by the House of Delegates, these reports then represent the views and policy of the American Medical Association and have behind them the enormous power and influence which has already made itself so effective in advancing medical standards in America.

It will be obvious that the general feeling of the Congress was that "undergraduate" medical instruction should be simplified in its aim, that the patient should be brought at a very early stage before the student, and that the fundamental sciences of anatomy, physiology and pathology, possibly slightly modified by clinical requirement, should be carried on in actual application to patients, during the entire four years (as has already been done to some degree in anatomy). It was further believed that the specialties, research and preparation for a laboratory career, should be in large measure transferred to post-graduate instruction. This in turn should be better organized, more definitely standardized, and more widely extended than at present; and certificates of post-graduate work should be awarded with as much proportionate care as now obtains in the matter of the M.D. degree. Finally, much emphasis was given to public medicine and public health—a field the extent of which is at present appreciated by few; a field to which many men not always successful in individual effort, might well aspire; a field concerned primarily with medicine in the mass, and with prevention more than with cure.

Papers upon public health were presented on Wednesday, March 7. Dr. Hugh S. Cumming, Surgeon-General, U. S. Public Health Service (who presided at this session), read the Report of the Conference on "The Education of Sanitarians and the Future of Public Health in the United States." He pointed out that at present the profession as a whole is unaware of the size of the problem, its opportunities, its character; and that there are as yet only a few schools of public health; that although one or more courses on the subject are given in a considerable number of schools, these courses are often fragmentary, and unrelated, and usually inadequate, at least for future needs. There are at present opportunities for from 1000 to 2000 trained physicians, and the number of public health nurses that may be utilized is more than ten times as many.

Dr. W. F. Draper described the activities carried on by the Public Health Service since 1922; they are many and varied and constantly increasing in number and scope.

Upon the general topic of "Training Sanitarians for the Future," Dr. C.-E. A. Winslow, Professor of Public Health, Yale Medical School, considered both the recruiting of students, and their attitude toward public health. Both of these depended largely upon making the student aware of the problem and its essentials, and upon providing them adequate instruction in its various branches. Students are favorably disposed towards such a career once they fully understand what it means, and what are the conditions which surround it.

Dr. Allan MacLaughlin, Surgeon, U. S. Public Health Service (formerly Commissioner of Health for Massachusetts) described the steps already taken toward standardizing the public health training; described some of its duties; pointed out that tenure of office and promotion are now secure; illustrated the attractiveness of the size of the problems, and the opportunity for individual action, and told of the qualities of courage, resourcefulness and vigor, which the career demanded, and rewarded.

Dr. David Edsall was to speak on "The Course in Public Health and Hygiene for Medical Students," but he was unable to be present. His paper will be printed with the others.

Discussion followed by Dr. John Sundwall, Director Division of Public Health, University of Michigan Medical School, and Dr. Edwin O. Jordan, Professor of Bacteriology, University of Chicago; Dr. Frederick Sears, Associate Professor of Hygiene and Preventive Medicine, Syracuse University College of Medicine; Dr. Roy Lyman Wilbur, President Leland Stanford University, and Dr. Watson Rankin, State Health Officer, North Carolina, discussed "Some Current Problems of the Public Health Service."

These papers filled a long afternoon on the final day of the Congress, yet the attendance was large and the audience remained to the end. The impression left upon the hearers was one of conviction that if perchance the field of Individual Medicine is a little crowded, that there is ample room in Public Health and Preventive Medicine for an indefinite number of properly trained physicians, and finally, that it is already possible to obtain entirely adequate training in several existing schools.

RÉSUMÉ OF COMMUNICABLE DISEASES.

FEBRUARY, 1923.

GENERAL PREVALENCE.

The common communicable diseases showing an increase over last month are as follows: Influenza, measles, lobar pneumonia, scarlet fever, whooping cough. The more prevalent diseases were reported as follows:

	Feb. 1923	Jan. 1923	Feb. 1922
Chicken-pox	567	990	624
Diphtheria	662	889	785
Encephalitis lethargica	28	8	5
Influenza	1,162	611	5,217
Measles	3,874	3,623	2,061
Mumps	750	839	492

	Feb. 1923	Jan. 1923	Feb. 1922
Pneumonia, lobar	979	900	986
Scarlet fever	1,301	1,215	944
Typhoid fever	22	38	32
Whooping Cough	1,404	1,532	390
Tuberculosis, pulmonary	508	501	444
Gonorrhea	313	427	315
Syphilis	141	156	152

RARE DISEASES.

Actinomycosis was reported from Boston, 1.

Anterior poliomyelitis was reported from Boston 1, Cambridge 1, Fairhaven 1, Fall River 1, Lowell 1, Lynn 1, Newton 1, Shirley 1, Weston 1; total 9.

Dogbite requiring anti-rabic treatment was reported from, Arlington 2, Boston 3, Holyoke 1, Lowell 8, Melrose 3, Needham 2, South Hadley 1, Upton 1, Wellesley 1; total 22.

Encephalitis lethargica was reported from Arlington 1, Boston 9, Braintree 1, Brockton 1, Cambridge 2, Everett 1, Fall River 2, Holden 3, Lawrence 1, Lowell 1, Quincy 1, Springfield 1, Worcester 4; total 28.

Epidemic cerebrospinal meningitis was reported from Boston 4, Concord 1, Fairhaven 1, Gardner 1, Lawrence 1, Leominster 1, Ludlow 1, Marblehead 1, Templeton 1, Worcester 1; total 13.

Hookworm was reported from Boston 2.

Malaria was reported from Brockton 1.

Septic sore throat was reported from Acushnet 1, Brockton 2, Brookline 1, Cambridge 1, Douglas 1, New Bedford 1, Northbridge 1, Salem 1; total 9.

Tetanus was reported from Natick 1.

Trachoma was reported from Boston 3, Milford 1; total 4.

Trichinosis was reported from Cambridge 1.

The distribution of all communicable diseases was as follows: Total cases (all causes) for February, 1923, was 11,987; for February, 1922, the total was 12,684. Case rate per 100,000 population for February, 1923, 302.0; for February, 1922, 322.3.

The distribution of certain prevalent diseases and the cities and towns noticeably exceeding their median endemic indexes* are given as follows:

Diphtheria. — Fall River, (22), 31; Canton, (0), 6; Franklin, (0), 4; Hingham, (0), 4; Norwood, (0), 5; Ipswich (0), 6; Peabody, (3), 8; Reading, (0), 10; Waltham, (4), 7; Watertown, (4), 9; Uxbridge, (0), 5; Springfield, (12), 29; Westfield, (1), 8.

Total cases for February, 1923, 662; case rate per 100,000 population, 16.7. Total cases for February, 1922, 785; case rate per 100,000 population, 19.9.

Measles.—Acushnet, (0), 44; Attleboro, (2), 32; Bourne, (0), 37; Dartmouth, (0), 33; Fairhaven, (1), 59; Fall River, (22), 175; Falmouth, (1), 37; Middleboro, (3), 50; New Bedford (13), 617; Norton, (0), 21; Rehoboth, (0), 25; Taunton, (5), 240; Wareham, (0), 43; Braintree, (2), 58; Cambridge, (132), 167; Wrentham, (0), 10; Chelsea, (4), 30; Everett, (31), 75; Haverhill (2), 21; Lynn, (4), 396; Malden, (10), 64; Newburyport, (1), 20; Salisbury, (0), 12; Saugus, (0), 37; Swampscott, (0), 34; Winthrop, (2), 56; Arlington, (5), 32; Dracut, (—), 98; Lowell, (10), 398; Woburn, (1), 47.

Total cases for February, 1923, 3874; case rate per 100,000 population, 97.6. Total cases for February, 1922, 2061; case rate per 100,000 population, 52.4.

Scarlet Fever. — Taunton, (5), 36; Boston, (165), 240; Marlboro, (0), 10; Medway, (0), 7; Natick, (1), 22; Newton, (10), 42; Quincy, (9), 54; Rockland, (0), 6; Weymouth, (1), 15; Haverhill, (9), 30; Wakefield, (1), 12; Billerica, (0), 6; Lowell, (6), 26; Milford, (4), 30; Worcester, (36), 58; Amherst, (0), 7; Holyoke, (6), 88; Northampton, (6), 23; Springfield, (25), 39; Pittsfield, (6), 22.

Total cases for February, 1922, 1301; case rate per 100,000 population, 32.8. Total cases for February, 1921, 944; case rate per 100,000 population, 24.0.

Typhoid Fever.—Total cases for February, 1922, 22; case rate per 100,000 population, .6. Total cases for February, 1921, 32; case rate per 100,000 population, .8.

Whooping Cough.—Taunton, (1), 15; Boston, (89), 326; Brookline, (13), 52; Cambridge, (38), 212; Milton, (0), 26; Newton, (17), 97; Quincy, (4), 23; Wellesley, (1), 17; Everett, (2), 34; Malden, (4), 33; Peabody, (0), 8; Saugus, (1), 16; Winthrop, (2), 17; Lawrence, (13), 68; Lowell, (2), 15; Somerville, (9), 39; Winchester, (0), 19; Holyoke, (1), 19; Springfield, (14), 34; W. Springfield, (0), 8; Adams, (0), 8.

Total cases for February, 1922, 1404; case rate per 100,000 population, 35.4. Total cases for February, 1921, 309; case rate per 100,000 population, 9.9.

The total number of cases of pulmonary tuberculosis for February, 1922, was 508; the case rate per 100,000 population was 12.8. In February, 1921, the cases totalled 444, the case rate being 11.3. Other forms of tuberculosis totaled 65 in February, 1922, with a case rate of 1.6. The cases numbered 51 in February, 1921, with a case rate of 1.3.

*The Median Endemic Index is obtained by arranging in arithmetical sequence the monthly totals of reported cases for the past 5 years and selecting the middle figure. The numbers in parentheses after the names of each city and town indicate the median endemic index for that city or town; the numbers without parentheses indicate the cases reported during the current month.

IMMUNOLOGIC TYPES OF B. PERTUSSIS.

Krumwiede, Mishulow and Oldenbusch, in *The Journal of Infectious Diseases* for January, 1923, report investigations on the antigenic properties of pertussis vaccine.

For comparison with older stock strains it became necessary to isolate a new strain of B. pertussis. Rabbits were injected with a suspension of one of the newly isolated strains, and it was found that their serum caused only slight agglutination of the old stock strains. These results, in short, demonstrate the existence of two groups of B. pertussis, and strongly indicate the likeness of the strains within the group.

In conclusion they state that their tests have demonstrated that the cultures studied fell into two serologic groups, designated as A and B. "Antiserums for Group B agglutinate the strains of Group B, but agglutinate the strains of Group A slightly or not at all. Group A serums, however, agglutinate not only the strains of Group A, but also agglutinate the strains of Group B to a considerable extent. The serologic differences are, therefore, sharply defined in one direction, but group relationship is shown in the reverse direction."

The interest of this work is on its possible bearing on the use of pertussis vaccine, and may explain the uncertain and conflicting results obtained with the vaccine in the past. In this it follows in the wake of the knowledge, now general, of the specific serologic types and strains of the pneumococcus and the meningococcus, and further research into the strains and groupings of the organisms of various diseases may explain our failures in attempting the specific prevention and treatment of them, and pave the way to more uniform success in the future.

PHYSICIAN "DOES NOT USE ANTITOXIN."

The New York State Department of Health has recently published a report of four deaths occurring in a family of seven children, all infected with diphtheria. A physician was called on the seventh day of the illness of the first case to develop and made the diagnosis of diphtheria, but failed to administer antitoxin, as it was not his custom to do so. The death of three of the other children subsequently occurred, the remaining three recovering from the disease. These deaths, while regretted by the physician, were considered as unavoidable, due to a lowered vitality on the part of the patients. A fifth diphtheria death has since been reported from his practice.

Our conclusion is these deaths are due to a lowered moral and ethical sense on the part of the physician.

News Items.

STATE BOARD MEDICAL EXAMINATIONS.—Forty-eight applicants for medical registration were examined by the Board of Registration March 13, 14 and 15.

MASSACHUSETTS GENERAL HOSPITAL.—The Fortnightly Clinical Conference of the Medical Staff was held in the Cardiac Clinic Room, Out-Patient Department, Tuesday noon, March 20. Cases were presented for discussion.

HARVARD MEDICAL SOCIETY.—The Society met in the Peter Bent Brigham Hospital amphitheatre, Tuesday evening, March 20. The program consisted of a demonstration of cases and a paper by Dr. William Murphy entitled, "The Result of the Serum Treatment of Type I Pneumonia in This Hospital."

WEEK'S DEATH RATE IN BOSTON.—During the week ending March 17 the number of deaths reported was 292, against 259 last year, with a rate of 19.76. There were 37 deaths under one year of age, against 55 last year. The number of cases of principal reportable diseases were: Diptheria, 68; scarlet fever, 80; measles, 116; whooping cough, 77; tuberculosis, 27. Included in the above were the following cases of non-residents: Diphtheria, 12; scarlet fever, 13; measles, 2; tuberculosis, 15. Total deaths from these diseases were: Diphtheria, 6; scarlet fever, 3; measles, 1; whooping cough, 6; tuberculosis, 15. Included in the above were the following cases of non-residents: Diphtheria, 1; scarlet fever, 1; tuberculosis, 1.

WEEKLY HEALTH INDEX.—The Department of Commerce, Washington, reports that telegraphic returns from 70 cities with a total population of 29,000,000 for the week ending March 10 indicate a mortality rate of 17.3, as against 16.6 for the corresponding week of last year. The highest rate (25.9) appears for Erie, Pa., and the lowest (7.8) for Duluth, Minn. The highest infant mortality rate (209) appears for Lowell, Mass., and the lowest (23) for Duluth, Minn. The annual rate for the 65 cities, which have sent in all weekly reports for 1922 and 1923, is 16.5 for the ten weeks of 1923, against a rate of 15.2 for the corresponding period of 1922. Influenza and pneumonia are still prevalent. This week 15 cities show rates of 20 and over per 1000 population, whereas for the corresponding week of last year 13 cities had such high rates.

UNITED STATES CIVIL SERVICE EXAMINATION.—The United States Civil Service Commission announces the following open competitive examination: For junior pathological technician the

receipt of applications will close on April 24. The examination is to fill a vacancy in the Army Medical Museum, at Washington, D. C., at an entrance salary of $1800 a year, plus the increase of $20 a month granted by Congress. The duties will consist of the dissection, preparation, preservation, description, and classification of pathological material and arrangement of this material for exhibit; also independent research work along these lines. Competitors will not be required to report for examination at any place, but will be rated on the subjects of: (1) education, training, and experience, and (2) pathological specimen, to be submitted with application. Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D.C., or secretary of the Board of U. S. Civil Service Examiners at the post office or custom house in any city.

Obituary.

GEORGE RUSSELL FESSENDEN, M.D.

Dr. George Russell Fessenden, a practitioner in Ashfield for over forty years, died in that town March 18, 1923, at the age of 73.

He was a native of Rochester, N. H., where he was born, December 6, 1849. He graduated from Harvard College with the class of 1874, entered Harvard Medical School, served as house physician at the Western Pennsylvania Hospital in Pittsburg, took his M.D. at Harvard in 1879 and settled in practice at Plainfield, Mass. By 1881 he had moved to Ashfield, where he was chairman of the town Republican Committee, chairman of the Library, president of the Franklin District Medical Society for two terms, and actively engaged in the affairs of the town all his life. From 1881 to 1913 he maintained fellowship in the Massachusetts Medical Society. In the year 1900 he represented his town in the State Legislature. Dr. Fessenden is survived by his widow, who was Miss Kate Manilla Pratt, and by a son and a daughter.

THOMAS KITTREDGE, M.D.

Dr. Thomas Kittredge, a retired member of the Massachusetts Medical Society, died at his home in Salem, March 11, 1923, at the age of seventy, survived by a son and daughter and three brothers, one of them Dr. Joseph Kittredge, of Andover, formerly of Brookline, a fellow of the society.

Thomas Kittredge was born in North Andover, April 4, 1852, the son of Dr. Joseph and Henrietta Watson Kittredge. He took his M.D. at the Long Island College Hospital, Brooklyn, N. Y., in 1874. Until 1877 he was assistant port physician of Boston, when he settled in Salem. For years he was active in the militia, as surgeon, and in 1891 he was appointed surgeon-general by the late Governor William E. Russell. From 1879 to 1893 Dr. Kittredge was surgeon on the staff of the Salem Hospital and during the World War he served on an advisory board for the Salem district. He was a fellow of the American College of Surgeons and a member of the American Medical Association.

Correspondence

A CRITICISM OF DR. JOHN DILL ROBERTSON'S ATTITUDE.

Southbridge, Mass.

Mr. Editor:

In your editorial of March 8th was discussed a criticism of the medical profession by Dr. John Dill Robertson, formerly Health Commissioner of Chicago.

Such criticism is unjust and it is the stereotype criticism by such as do not look below the surface of things, or it is insincere.—a play to the galleries. The physician is a convenient and popular scapegoat. He was the one last seen near the victim and the circumstance was suspicious.

The medical profession is essentially humanitarian. Its sacrifices are many and great, its rewards few and small, its glories and honors *nil*. It is a Red Cross organization behind the battle line of modern industrialism, endeavoring to save a few here and there out of the wreckage of human lives. It has no more control over the causes that produce this wreckage than the Red Cross nurse has over the diplomacy of the nations engaged in the war.

Observation has shown and statistics have demonstrated again and again that the morbidity and mortality rate is in inverse ratio to salary and in direct ratio to costs of living. And these are factors the medical profession cannot control. Through the self-sacrificing labor of the medical profession diseases like smallpox, bubonic plague, yellow fever, typhus fever, typhoid fever and malaria have been held in check and probably can never occur in epidemic proportions among civilized nations again. And nations can maintain larger armies for a longer time in the field and, as a consequence, we have with us as an offset the streptococcus hemolyticus and other horrors of war.

The problem of poverty, disease and vice, like the riddle of the Sphinx, is presented to every nation for solution, and the nation that fails in its solution is destroyed by them. It is true a solution was given to the world two thousand years ago, but the world since then, by common consent, has rejected it as impractical and is still groping about for a workable substitute.

In this age of efficiency, we pride ourselves on the quantity and quality of salable goods we produce but we can take no great pride in the quality of humanity our shops, factories and mines are turning out. Human lives are of so little or doubtful value that we have made laws excluding them from our ports of entry. As Thomas Carlyle wrote: "A white European man, standing on his two feet, with his two five-fingered hands at his shackle bone, and marvelous head on his shoulders is not only worth nothing to the world but the world could afford him a round sum, would he simply engage to quit and hang himself." The Christian nations of today are more interested in swift battleships, and aeroplanes, rapid

fire guns, high explosives and poison gases than they are in the means to preserve human life.

Who can tell how many have died this season as a direct consequence of the fuel famine? How many more will die or go through life more or less handicapped by the after-effects of hardships and sufferings undergone? Somebody was responsible for it, and undoubtedly somebody profited by it, but who they are, in spite of congressional investigations, will never be known. All the didactic efforts of all the physicians in all the country would not have relieved the situation one particle. Another year the same thing will be repeated with some other common necessity of life. Tariffs, speculation and profiteering in vital necessities and actual, deliberate destruction of these necessities are the common means employed to create temporary conditions of famine so that a few may profit through the want and suffering of the many. So long as *homo sapiens* has the instincts and passions of the paleolithic man, so long will these conditions exist, and in the meantime we must endure these evils as best we can.

As for these new activities proposed for the medical profession, the wealthy and well-to-do do not need them. They can always command the services of the best physicians and can gain all needed information in the abundant literature covering all health subjects. In short they can take care of themselves. The helpless, inarticulate poor, need not so much advice as they do the things essential to their health and well-being, such as comfortable homes, cheap and abundant food, clothing and fuel, and a little more for healthful and rational recreation.

Until they have these things they will not be in a condition to listen patiently to your health talks. Like the drowning boy in the fable, they will demand of you to save them first, and talk to them afterwards.

W. G. Reed, M.D.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Mr. Editor:

The train for the special 25-day tour from New York City to the meeting of the American Medical Association in San Francisco, gotten up under the auspices of the Medical Society of the State of New York, is already filled.

Another train will be arranged for if 125 more subscribers can be secured. In order to do this, however, it will be necessary for applications to be in not later than the 15th of April.

All applications should be sent direct to Mr. J. S. McAndrew, Tour Manager, Lifsey Tours, Inc., 1472 Broadway, New York, N. Y.

Edward Livingston Hunt, *Secretary.*

BRISTOL NORTH DISTRICT MEDICAL SOCIETY.

The Annual Meeting of the Bristol North District Society will be held at Taunton on Thursday, April 26.

N. E. DERMATOLOGICAL SOCIETY.

The Regular Quarterly Meeting of the New England Dermatological Society will be held at the Boston City Hospital, in the Surgical Ampitheatre, on April 11, at three o'clock. All physicians who are interested are invited to attend.

THE ANNUAL DUES.

The Treasurer has not furnished this office with a complete corrected list of the paid up membership. The council has voted that members in arrears after March first shall not receive the Journal.

The Journal does not assume to place the responsibility for this delay. Reports of paid up membership of some of our larger districts have not been received. The Journal, however, is under obligation to carry out the vote of the Council. If this vote of the Council does not represent the purpose of the majority of our members it should be rescinded or modified. A policy having been adopted, we should abide by it so long as it is in force.

This office has tried to get the most recent available information by appeals to the district treasurers. The Treasurer of the Society has asked us to refrain from sending requests for information to the district treasurers.

The list is being revised according to data submitted. If any member who has paid fails to receive the Journal at any time, please inform this office and Journals will be furnished for the time covered by the payments.

A LAY OF ANCIENT EGYPT.

King Tutankhamen in his tomb
Three thousand years had lain
Within the sound-proof inner room
Designed to rest the brain

Of any late lamented king
Who might be laid away
Until the Judgment bell should ring
Upon the Judgment Day.

For there he logically might
Expect to rest in peace,
As is the precedented right
Of mortals who decease.

Man's plans oft wander far afield;
His journey leads through strife.
A fly within that vault was sealed;
That fly came back to life.

A mummied fly, three thousand years
Upon a window sill,
His mind care-free from insect fears,
He lay, feet up, until—

King Tutankhamen stirred and woke;
A buzzing filled his ears—
He moved his rusty jaws and spoke
(After three thousand years).

"Ho, henchmen, warders, guardsmen who
Defend me where I lie,
King Tutankhamen calls to you—
Come here and swat this fly."

"Come here and swat these million flies
That fill the cloistered air."
Then painfully he blinked his eyes
And started in to swear.

A plague of flies within the tomb
Of Tutankhamen crawl—
They overnow the inner room
And buzz about the hall!

Imagine, reader, if you can,
(You can't; no more can I)
The progeny that in that span
Of years came from that fly.

King Tutankhamen sank again
Into his mummy case.
His heart was weak, the shock too great—
Too great for him to face.

The flies escaped; they found a way
That led into the light.
And Tutankhamen once more lay
Till lately brought to sight.

A moral, housewives, I'll append,
To swat them where they lie,
And then my story's at an end—
But swat the winter fly!

Jog.

SCHICK TOXIN-ANTITOXIN ACTIVITIES OF BOSTON HEALTH DEPARTMENT.

MAY 6, 1922, TO MARCH 1, 1923.

Schick Tests	Readings	Positive	Positive Combined	Pseudo	Negative	T.A.T. Injections 1st	2nd	3rd
				COMPLETED CASES.				
29,871	27,752	12,487	1,577	4,032	9,656	12,765	11,566	10,691
				RE-SCHICKS.				
1,522	1,276	164	7	157	948	81	67	57
				PRE-SCHOOL AGE.				
						205	187	161
				GRAND TOTAL.				
31,393	29,028	12,651	1,584	4,189	10,604	13,051	11,820	10,909

General Immunity Produced 86.5%

A group of 521 recently re-Schicked shows the following percentage of immunity produced after 1st, 2nd and 3rd injections of T. A. T.

Immunity produced after 1 injection of T. A. T.—44.6%
Immunity produced after 2 injections of T. A. T.—77.3%
Immunity produced after 3 injections of T. A. T.—92.5%

CULTURES.

Cultures of Positive Schick Reactors before T. A. T.

Number	Positive	Negative	Percentage
1,663	103	1,560	6.5% Positive

Cultures of Negative Schick Reactors

1,000	57	943	5.7% Positive

Cultures of Positive Schick Reactors 6 Months After T. A. T.

1,347	36	1,311	2.7% Positive

Virulence tests of cultures before T. A. T. injections 0%
Virulence tests of cultures after T. A. T. injections 0%

JOHN A. CECONI, M.D., *Epidemiologist.*

SOCIETY MEETINGS.

The annual meeting of the Massachusetts Medical Society will be held in Pittsfield, June 12 and 13.

DISTRICT SOCIETIES.

A list of society meetings is herewith published. This list will be changed on information furnished by the secretaries of the societies, and will appear in each issue.

Barnstable District:—Hyannis, May 4, 1923.

Bristol North District: Annual meeting at Taunton, April 26.

Bristol South District:—Fall River, May 3, 1923.

Essex North District:—Lawrence, Y. M. C. A. Building (Annual Meeting), May 2, 1923.

Meetings of the Suffolk District and the Boston Medical Library, at the Library:

April 25, 1923:— Annual Meeting. Election of Officers. "The Record of the Past Twelve Years in Syphilology, with a Forecast of the Future." A series of 10-minute papers. Dr. C. Morton Smith, Boston, will preside.

The Springfield Academy of Medicine meets the second Tuesday of each month. Schedule of speakers includes the following names: Dr. Alexis Carrel, Dr. W. B. Long, Dr. J. W. Williams, Dr. W. S. Thayer, and Dr. Barton Cooke, Hist. The date for each speaker has not been assigned.

Middlesex East District:

April 18, 1923:—Interpretation of Laboratory Findings. Papers by Dr. E. G. Crabtree and one to be announced later.

May 9, 1923:—Annual Meeting.

All meetings except the Annual Meeting will be held at the Harvard Club in Boston. A. E. Small, Secretary.

Worcester District meetings are scheduled as follows:

April 11, 1923:—The meeting will be held at Memorial Hospital at 8.15 P. M., and the program will consist of a series of papers by members of the staff.

May 9, 1923:—Annual Meeting and banquet.

STATE, INTERSTATE AND NATIONAL SOCIETIES.

NEW ENGLAND PEDIATRIC SOCIETY:—The following are the dates for meetings the coming season. Each meeting is on the second Friday of the month at the Boston Medical Library: April 13 and May 11.

March, 1923:—Massachusetts Society of Examining Physicians (date and place undecided); Hilbert F. Day, Secretary.

April, 1923:—New England Dermatological Society meeting, April 11, 1923, at 3 P. M., in the Surgical Amphitheatre, Boston City Hospital; C. Guy Lane, Secretary. Massachusetts Association of Boards of Health, April 26, 1923, Boston; W. H. Allen, Mansfield, Mass., Secretary.

April, 1923:—Boston Medical History Club will meet the third Monday of this month.

May, 1923:—Massachusetts Society of Examining Physicians (date and place undecided). American Pediatric Society meeting, May 31, June 1 and 2, 1923, at French Lick Springs Hotel, French Lick, Ind.; H. C. Carpenter, Secretary.

May, 1923:—Boston Association of Cardiac Clinics. Meeting May 17, 1923, at 8.15 P. M., Children's Hospital. Subject: Rheumatism and Chorea and Heart Disease.

June, 1923:—American Medical Association, San Francisco, June 25-29, 1923; Olin West, Chicago, Ill., Secretary.

July, 1923:—Massachusetts Association of Boards of Health, July 26, Nantasket; W. H. Allen, Mansfield, Mass., Secretary.